The Builder.

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The Proposed Queen Victoria Monument.

IT appears that the announcement of the selection of five architects to engage in a limited competition for the proposed monument to Queen Victoria, which had found its way into some of the daily papers, was substantially correct. It is now officially announced that Mr. T. G. Jackson, R.A.; Mr. Aston Webb, A.R.A.; Mr. Ernest George, Sir Thomas Drew, and Dr. Rowand Anderson, have been invited to prepare designs for the treatment of the western end of the Mall, where the monument itself (in whatever form) is to be placed; and also to submit a general scheme to include an architectural entrance at the Spring Gardens end of the Mall, as well as "an architectural re-arrangement of the Mall with groups of sculpture at intervals, the whole forming a processional road." The Committee having the matter under direction consists of Lord Esher, Lord Windsor, Sir E. Poynter (President of the Royal Academy), Mr. W. Emerson (President of the Institute of Architects), Mr. Sidney Colvin, and Mr. A. B. Freeman Mitford. It has also been decided to invite Mr. Thomas Brock, R.A., to prepare a design for a group or groups of sculpture, including a statue of the late Queen, to be placed opposite the entrance gates of Buckingham Palace.

The Committee seems a good one, and the appointment of the President of the Royal Academy and the President of the Institute of Architects implies that it is intended that both sculpture and architecture should be properly considered in the scheme. What are Mr. Mitford's claims to a place on such a Committee is not apparent; but at all events this is an improvement on the ideas of twenty years ago, when committees of taste on public works were usually made up on political grounds only, and artists were carefully excluded.

Beyond this, however, we fear that the inception of the scheme cannot be regarded as satisfactory, and will not give satisfaction to the public. No architects of any standing, of course, will grudge the five selected men their good fortune, in spite of the absurd idea of the *Times*, that the glaring piece of self-advertisement on the part of one person, which they allowed to appear in their columns, represents the general feeling of disappointed architects craving for a share in the job; a conclusion which is a sort of libel on all the most eminent and self-respecting architects of the day. But if the competition was to be limited, we may reasonably ask, why it was to be limited to five? Surely the Committee might have found a dozen architects in Great Britain worth including in the list, and have thus given a wider basis to so important a competition. But our own opinion—with which, it is evident, public feeling coincides—is that for a work of such national interest and such great importance there should at least have been a sketch competition open to all architects and sculptors of the United Kingdom. Such a competition would have been an event of the greatest interest in itself, and might have brought out some suggestion of genius which every one would have been glad to have. From such a sketch competition six, say, might have been selected to engage in a final competition. Some such system is undoubtedly what would have been adopted in France, where they understand better how to manage these matters.

And if we (and the public) complain of the limitation of the competition to five architects, we have still more right to complain of its limitation to one sculptor. Mr. Brock has a special reputation for portrait statues, but it can hardly be maintained that he is the leading genius in English sculpture; nor ought this to be a mere question of a portrait statue. On the contrary, it is a question whether a portrait statue is an advisable element at all in such a monument. For in all portrait sculpture there is the unavoidable discrepancy between the ideal character of sculpture as an art, and the realistic character of modern costume. We may again appeal to the example set by the French, frequently at least, in such cases of personal memorials. Their favourite scheme is to produce a monument with symbolical sculptured figures representing abstract qualities or virtues, accompanying a bust or medallion portrait of the person commemorated, without any attempt at a realistic full-length presentation. Thus the whole monument is raised to the level of a poetic conception, and the incongruity of the prosaic detail of modern costume is avoided. In one case in England this has been admirably done on a small scale, in Mr. Gilbert's beautiful monument to Fawcett which is hidden away in a dark corner behind the west door of Westminster Abbey. And may we not take the Albert Memorial as a warning in this respect? In a general decorative sense the Albert Memorial, with some faults, is a remarkable work, in our opinion a good deal under-valued; but what is the absolute mistake (not to use a stronger word) in connexion with it? The portrait statue, unquestionably.

Let us turn now to the purely architectural part of the problem, and consider what can be done with this proposal to transform the Mall into "a processional road, with groups of sculpture at intervals." There are one or two points in connexion with such a scheme which do not seem to have occurred to any one, as far as published comments go at all events. In the first place, any transformation of the Mall into a really dignified and architecturally designed processional road must involve cutting down the existing trees in it, to begin with. If they were grand "immemorial" trees (to use Tennyson's expression) this might not be necessary; but they are poor and irregular growths, not likely either to come to anything more, and they would sadly interfere with any attempt to produce a monumental effect. Secondly, it certainly appears to us that if the ground immediately in front of Buckingham Palace is to become a monumental site sacred to

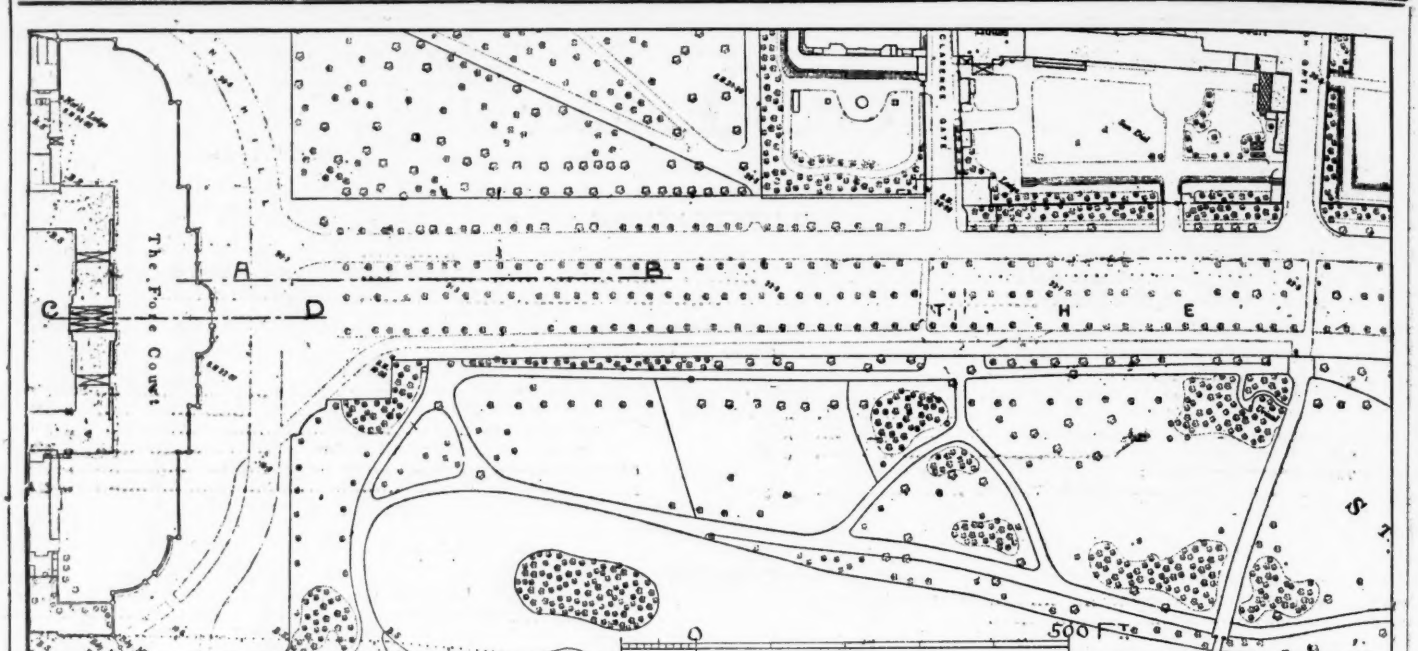


Fig. 1.—Buckingham Palace and the Mall as at Present.

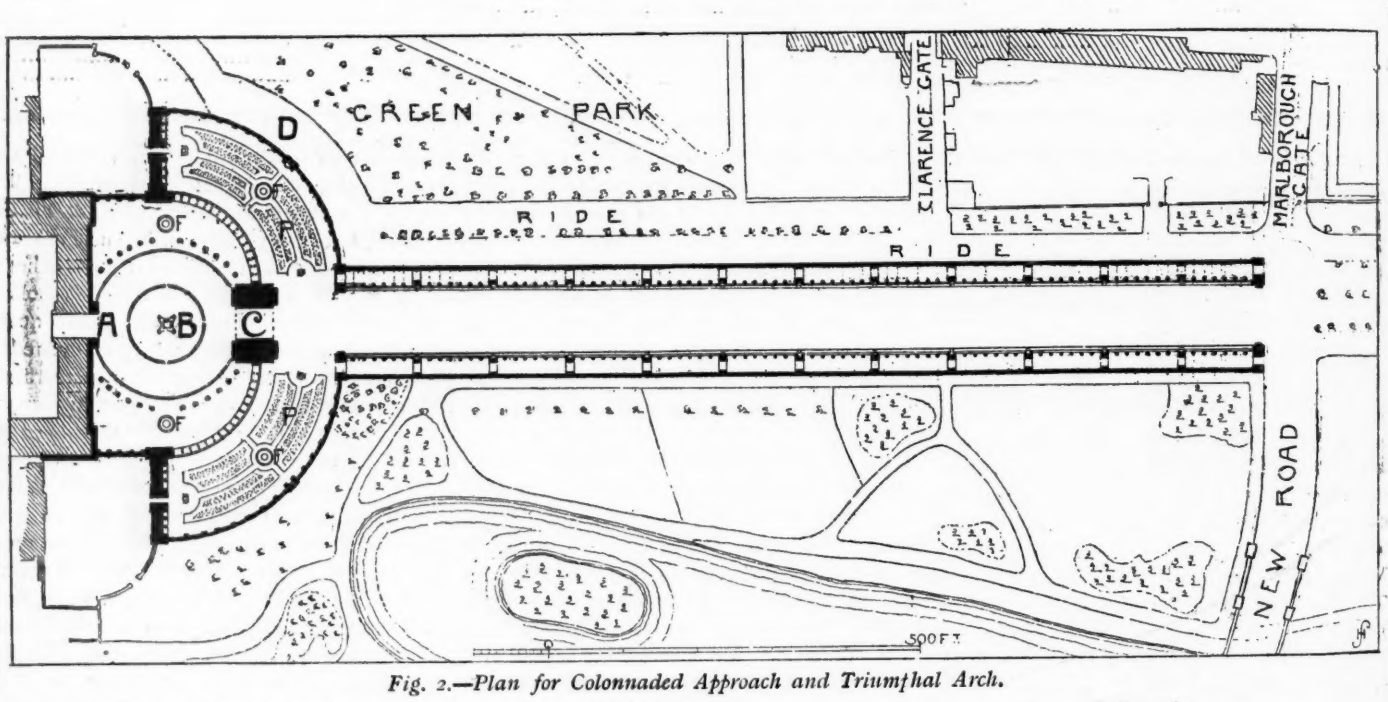


Fig. 2.—Plan for Colonnaded Approach and Triumphal Arch.

A. Buckingham Palace with new face to the façade.
B. Victoria statue.
C. Triumphal arch.
D. Road connecting Constitution Hill with Ride.
F. Fountains.
P. Ornamental parterres.

the memory of a great sovereign, the first thing to do is to put a stop to its use as the common cab thoroughfare to Victoria Station. It is we believe the fact (at all events we have seen it confidently stated in print), that the late Queen herself strongly objected to the existence of this exceedingly public road just outside the front railings of the Palace; and it may have been partly on that account that she used Buckingham Palace as little as possible. Certainly, a greater seclusion and dignity ought to belong to the approaches to the principal royal palace of the capital. Thirdly, as we have already observed, Buckingham Palace, though it contains internally a very fine *suite* of rooms, is externally a very poor affair in an architectural sense, quite unworthy of its position and function; and the erection in front of it of a new and, we may hope, impressive monument will render it, by contrast, even less imposing than at present. We again therefore, strongly urge that this occasion should be taken to reface the principal façade of the Palace, or rather the whole of the front block, including the returns at the ends, with a new and more dignified design carried out in a fine stone; and that this should be considered as a portion of the memorial scheme, and form at the same time a worthy architectural background to the new monument.

Now, considering the two obstacles to a monumental processional road to which we have referred—the trees and the public cab-road, we would suggest that there is a method of making these two difficulties meet each other half-way, so to speak. But first let us reconnoitre the ground. Fig. 1, reduced from the Ordnance map, shows the site as now existing. From this it will be seen that though the avenue more especially called the Mall is central, or approximately so, with the axis of the Palace, the central axis of the total space, including the road and the avenue north of it, is some 50 ft. out of axis with the Palace. We will return to this point presently; let us for the present consider the Mall only, as axial with the palace. In order to divert the cab-traffic from the monumental site and from the vicinity of the Palace, we propose (fig. 2) to make a new road forming a continuation southwards of Marlborough Gate, crossing the lake in St. James's Park by a new stone bridge a little eastward of the present footbridge (which would be removed), and joining Birdcage Walk,* along which the public traffic would then go. The new bridge might be so treated as to be an ornament to the park, and it would also serve an exceedingly useful purpose in affording (what is much wanted) a direct road to St. James's-street from the centre of Westminster, instead of the circuitous route round one end or another of St. James's Park. Having thus got rid of the cab-road past the Palace, we have also got a good excuse for treating the Mall in two sections, east and west of the crossing of this new road. The eastern portion would be left with the trees, as it is at present, but with an architectural arch or other entrance from Whitehall. The portion west of Marlborough Gate would form a semi-private State avenue of approach to Buckingham Palace. The scheme indicated in fig. 2 shows a colonnaded loggia lining the road on each side, with niches for sculpture at the piers; the back wall of the loggia could be deco-

* Only the commencement of this road is included in the plan, but its proposed course is easily understood.

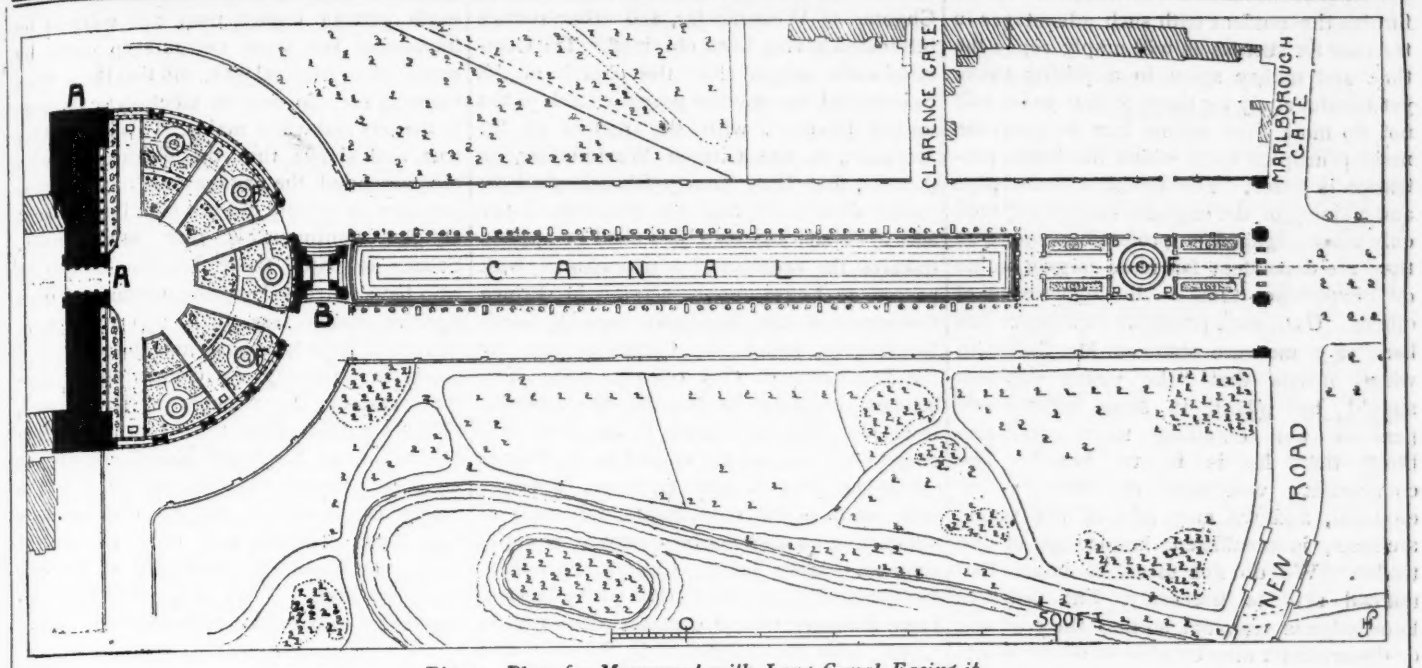


Fig. 3.—Plan for Monument with Long Canal Facing it.

A. Front block of Buckingham Palace rebuilt and extended northwards. | B. Victoria monument. | F. Fountains.

rated with a series of frescoes representing scenes from English history. This road leads up to a large triumphal arch, forming the entrance to the forecourt of the palace, as the Marble Arch actually did in former days. The forecourt is enclosed by semicircular colonnades, through which could be seen the Victoria Monument erected in the centre of the court. Outside these semicircular colonnades a space is laid out with ornamental flower-beds. At the eastern entrance to the road, by Marlborough Gate, would be great ornamental gates across the carriage-way. The idea is that the public under ordinary circumstances would be admitted into the loggias and up to the colonnades of the forecourt, but on occasions of levees and Drawing-rooms at the Palace they would be excluded, and the central gates would then be open for the access of carriages by this State route to the Palace. The space now occupied by the public carriage-way is turned into a Ride, and connects with Constitution Hill.

For carrying out such a scheme the trees in the Mall westward of Marlborough Gate would have to be removed, with the exception of the northernmost row, left standing along the Ride. If people exclaim at this as a ruthless proceeding, the answer is that Versailles was made in that way. For a decorative treatment of a site on a great scale, Nature must necessarily give way to Art.

Or we may imagine a treatment on a somewhat more extensive scale, still retaining the expedient of the new road from Marlborough Gate to Birdcage Walk, and the entrance gates by Marlborough Gate, but occupying the whole width of the Mall, the present carriage-road included. In this case the axis of the new site would be nearly 50 ft. northward of that shown on fig. 2, and the front block of the Palace would be entirely rebuilt and extended about 100 ft. northward, so as to bring its central axis in line with that of the approach (see fig. 3). The entrance into the inner quadrangle of the Palace would necessarily be brought out of centre with the quadrangle, and moved nearer to its north-east angle; but that is a matter of minor consequence compared with the general visible effect externally. By taking a few feet off the St. James's Park ground on one side, and a similar amount off some private gardens and the Green Park on the other side, we get width enough for two roads up to the forecourt of the Palace, for going and returning, and a straight canal between them, lined at symmetrical distances with pedestals, either for groups of sculpture, or sphinxes, or some analogous symbolical sculptures; while at the west end of the canal would rise the Victoria Monument, a structure comparable in scale and richness to the Albert Memorial, forming the culmination to the vista, and reflected in the water of the canal. If people say this canal is an extravagance, and not worth the result, it may be asked why they admire, and why artists are continually painting, the effect of the Taj Mahal seen at the extremity of a long artificial canal; and why an effect which is thought beautiful in India is not to be supposed to be beautiful in England? It may be added that this effect of a long straight canal axial with the centre of the Palace was the actual treatment of the ground in front of old Buckingham House, before the present wriggling piece of water in St. James's Park was made. The forecourt of the Palace is shown laid out in a semicircle with radiating walks and parterres and a series of fountains round the margin of the semicircle; this also is a reminiscence of the former treatment of the forecourt of old Buckingham House. The margin of the canal, between the pedestals, is supposed to be lined with artificially clipped trees at equal distances; and as the canal is at a level considerably higher than that of the St. James's Park lake, the water from it, after flowing through it (for it should be kept at a gentle flow and not left stagnant), could be taken by a concealed sluice to form a waterfall discharging into the park lake, and thus add an attraction to the park.

As in the previous scheme, it is supposed that the roads on each side of the canal and up to the monument should be ordinarily open to the public as a kind of "pleasaunce," and only closed to them on days of State functions at the Palace. At the eastern end of the canal the space between it and the Marlborough Gate entrance is laid out as an ornamental parterre, with a large fountain in the centre, which should be an artistic work of the highest class.

That anything on so grand a scale as this should be actually carried out we can indeed hardly hope, though there is absolutely nothing to prevent it except an objection to the cost. But whatever scheme is carried out should in our opinion include these three points—the architectural remodelling of the façade and the forecourt of Buckingham Palace; the diversion of public wheeled traffic from the immediate front of the Palace, and the provision of a more stately, dignified, and secluded approach to it; and the removal of the trees from the western portion of the Mall, in order to clear the ground for an artificial treatment of the site on a grand scale, with which these rather poor and irregularly growing trees must necessarily interfere.

We may conclude with repeating our opinion that there ought to be a sketch competition for the treatment of the site and the design of the monument, open to all British sculptors and architects, before any further steps are taken; and that public feeling will not be fully satisfied by anything short of this.

NOTES.

The Education of the Engineer.

"IT is plainly impossible, within the short space of three or four years and under academic conditions, to turn out an engineer, architect, or chemist fit for the full responsibilities of his profession." These words occur in the text of an address recently delivered by Principal Galbraith to the students and graduates of the Toronto School of Practical Science—an address which, although brief, is very much to the point. Technical education has been much talked about of late, and by some speakers it almost seems to be regarded as a sort of universal panacea for all ills that may afflict our commercial and professional pursuits. Mr. Galbraith is careful to emphasise the point that while a school can

furnish the student with such advantages in the race for success as will amply repay the time and money spent in acquiring them, yet faithful study for three or four years will not do more than enable him to grasp the main principles upon which his future profession is based. The practical knowledge and training of the engineer can be acquired only when engaged on professional work, as they are dependent far more largely on his own experience than on the experience of others. Until such practical experience has been in a measure obtained Mr. Galbraith wisely insists that "the young engineer should be placed in some subordinate position not entailing more responsibility than he is fit to bear." The commonest weakness of the young engineer, and we may add of the young architect, is insufficient knowledge of the trades. We do not mean to imply that manual skill is necessary, but practical knowledge is essential, so that the engineer or the architect may be able to decide when work is good and when it is bad, that he may know how it should be conducted, and that he should be familiar with the properties which affect the usefulness of any material specified by him. In the address to which we refer it is truly said "this practical knowledge cannot be obtained in the engineering school." A large proportion of civil engineers of the present day have followed the example of their predecessors, and have spent sufficient time in the "shops" to acquire a useful knowledge of practical work. It is quite the exception, however, for an architectural student to undergo a course of instruction in the workshops devoted to those crafts which it will be his ultimate duty to exemplify in professional work.

The Tuberculosis Congress.

THE British Congress on Tuberculosis, which will be held in the Queen's Hall from July 22 to 26, will no doubt be chiefly medical in its discussions, but the question of the prevention or diminution of consumption has a certain direct relation with conditions of building, and this has been recognised by providing, in the museum which will be formed in connexion with the Congress, an architectural section in which plans and models of hospitals and sanatoria will be exhibited. Mr. T. W. Cutler is acting as Hon. Secretary of this section. The subjects to be discussed at the Congress include also that of "The Influence of Housing and Aggregation"; under which heading come the questions:—"How far are additional lighting and ventilation necessary to ensure a much higher standard of bacteriological cleanliness, and what additional legislation, if any, is required to render these advantages available?" and "How may cleanliness, with a sufficiency of light and pure air, be secured in factories and workshops, and in places of assembly generally, including steamships, railway carriages, and other means of transit?"

All Saints and Holy Trinity Churches, Knightsbridge.

THE Ecclesiastical Commissioners, in pursuance of the Union of Benefices Acts, 1860 and 1898, have ratified a scheme for effecting a union of the two contiguous benefices (both being vicarages) of All Saints and Holy Trinity, Knightsbridge, the consents of the two vestries, the Dean and Chapter of Westminster, and other parties interested having been obtained. The Commissioners ordain that the church of All Saints shall become the parish church of the united benefice, with the rectors of St. Margaret, in the City of Westminster, as patrons, that Holy Trinity Church shall be pulled down, and that the proceeds of the sale of its site and materials shall be applied towards the erection of a new church, with parsonage-house, upon a site in Prince Consort-road (St. Stephen's parish), South Kensington, which the Commissioners for the Exhibition of 1851 offer for sale. The scheme provides further for the removal from Holy Trinity Church to the new proposed church of all the carved work, fittings (organ by Jones), and furniture, together with such of its monuments, tablets, and antiquities as may not be otherwise lawfully claimed. Holy Trinity Church, Park-side, Knightsbridge, was built (1860-61) by Messrs. Dove Brothers, whose contract amounted to 3,250*l.*, after the designs of R. Brandon and H. M. Eyton (see the illustration in the *Builder* of April 21, 1860). It occupies the site of a district chapel, rebuilt in 1699, which had been the hospital chapel of a lazar-house appertaining to the collegiate church of St. Peter, in Westminster, which Laud, when Bishop of London, converted into a chapel-of-ease to the parish of St. Martin-in-the-Fields, within the former limits of which it was then situated. The Dean and Chapter of Westminster are still, we gather, the ground landlords, and they are appointed patrons of the new church in Prince Consort-road. All Saints' Church was built fifty years ago, after Lewis Vulliamy's designs, in Ennismore-gardens, so named after Lord Ennismore, who was then living in Kingston House. The interior of the church was decorated by Owen Jones, and it has since been redecorated in sgraffito by, we believe Mr. Heywood Sumner. In August, 1891, the Consistory Court granted a faculty for an enlargement of the church, so as to afford further room for about 200 persons, at a cost of 4,000*l.*

Shocks from Electric Fittings.

WE were surprised that at the Board of Trade inquiry the subject of the dangerous pressures that exist in several cases between one main of a three-wire direct current system and adjacent water or gas pipes was not brought up by the opponents of the increased pressure. To us it appears the most serious drawback to the change. Engineers state truly enough that a shock of 200 volts is not a very serious matter, although they are careful to avoid them; but we regret to say that some of the London companies allow some of their mains to remain at a much higher pressure than 200 volts from the earth. In Glasgow one of the Corporation mains must always be above 250 volts from earth, and in Manchester and other towns, when testing the mains, the pressure between one of the mains and earth must be dangerous. The Board of Trade rightly prohibit the use of pressures greater than 250 volts between the mains in private houses, but this does not give complete protection from dangerous shocks unless they also prohibit pressures greater than 250 volts between any main and the gas or water fittings. The companies may object that the only way of preventing the pressure between any of the mains and earth getting higher than 250 volts is by increasing the stray currents to earth by means of an artificial leak, and that these stray currents may do serious electrolytic damage to the gas and water mains. This is perfectly true, and shows that the electricians who recommended the change over to the higher pressure of supply did not take into account all the contingencies that might arise. Sooner or later those London companies who have failed to keep the pressure of their positive mains less than 250 volts from earth will have to adopt some desperate and expensive remedy or completely change their system. In a paper by Mr. Russell, recently published in the "Journal" of the Institution of Electrical Engineers, various methods of regulating the pressures of the mains are described, but his conclusion is that those methods can only be applied when the insulation resistance of the network is high. They are, therefore, inapplicable to the older networks in London.

Cornbury Park, Oxfordshire.

THIS estate, covering 5,170 acres, which was bought from Lord Churchill in 1897 for 115,000*l.*, has just been sold. Known also as Wychwood, or Blandford, Park, and watered by a tributary of the Evenlode, it is situated near Charlbury and Woodstock, forming a part of Wychwood Forest, a hunting-ground of Henry II., that once extended over sixty square miles. The property belonged, *temp.* Elizabeth, to Robert Dudley, Earl of Leicester, and subsequently to Lord Danvers, advanced Earl of Danby; it was then owned by the Hydes, Earls of Clarendon (who thence took their second title of Viscount Cornbury), and afterwards by George, third Duke of Marlborough, whose son Francis was elevated Baron Churchill in 1815. In his diary for October 17 and 18, 1664, Evelyn records his visits to Cornbury in the company of Hugh May and Viscount Cornbury to help the latter in the planting of the park. He describes the present house as being

"lately built by the Earl of Denbigh [*sic*] in the middle of a sweet park, walled with a dry wall. The house is of excellent free-stone abounding in that part, a stone that is fine, but never sweats or casts any damp. . . . We designed a handsome chapel that was yet wanting, as Mr. May had the stables . . . having set out the walks in the park and gardens."

In Nicholas Stone the elder's MS. book of his own works are some entries (1631) which relate to his share in the building of the house. He writes:—

"Agreed with the Right Honbl. Lord Earell of Danby for to mak 3 ston gattes in to the phiseck garden, Oxford, and to desine a new hows for him at Corenbury in Oxfordsheer and to deruckt the workmen and mak all thar. . . I was thar in 2 years 33 times and my covenant of acord with his lordp. was 1,000*l.*" *

In or about 1630 Timothy Strong built the south front, with the cellars, great hall, and some adjoining rooms. Thirty years afterwards his son Thomas built, under Hugh May's directions, the stables fronting Charlbury and the part of the house and terraces fronting Oxford. A drawing by Neale shows the house as having two floors and an attic story, with a tetrastyle portico and an angle pediment in the middle of the principal front.

* Lord Danby, *obiit* 1644; Stone, *obiit* 1647; Lord Hyde was advanced Viscount Cornbury and Earl of Clarendon on April 22, 1661.

Farnworth and Kearsley Urban Districts.

ACCORDING to Dr. Fletcher's Report to the Local Government Board upon the sanitary circumstances of the Farnworth Registration Sub-district of the Bolton (Lancs.) Registration District, and upon the sanitary administration of the Farnworth and Kearsley Urban Districts, it seems that the Medical Officers of Health of these two sanitary areas have not been under the Board's order. Copies of the annual reports of the Medical Officer of Health for Farnworth have not been submitted to the Board, and those sent by the Medical Officer of Health for Kearsley have been deficient as regards the kind of information desired by the Board. In view of the above facts, the Board deemed it advisable that both districts should be inspected by one of their medical staff. Dr. Fletcher's Report gives much the same conditions for both districts. They are supplied with water from the mains belonging to the Corporation of Bolton; water derived principally from upland surface gathering grounds, the condition of which appears to permit certain opportunities of contamination of the supply. The almost universal method of excrement and refuse disposal is by means of privy-middens, all wrongly constructed. They are sunk beneath the ground level, most of them to a considerable depth; are very large, being capable in most instances of containing accumulations of refuse and nightsoil during a period of several months without becoming full. Excepting such nightsoil as is received by farmers, nightsoil and house-refuse are disposed of at one or other of the tips in the district. This is done by contract, and the method is to throw out into heaps on the surface of the ground the contents of several middens, and then to shovel the filth and refuse into carts. "Thus in a back street may be seen several large heaps of stinking material at one and the same time, and the method involves not only grave nuisance during the process, but serious pollution of the ground surface and subsoil." One is not surprised, after this, to read the following conclusions in the summary at the end of Dr. Fletcher's report. Mentioning some special causes of the prevalence of diarrhœa in the district, he continues:—

"But there are also other causes which exert a powerful influence on the prevalence of autumnal diarrhœa, and greatly encourage its local incidence and persistence. Chief among these are unwholesome circumstances, and especially such as are associated with pollution of the air and soil by decomposing animal and vegetable substances, and among such the foremost rank must be given to excremental material. These unwholesome conditions, moreover, are precisely those which encourage also the development, prevalence, and persistency of enteric fever. They have been shown to exist extensively throughout both the districts under consideration, and have undoubtedly had a large share in inducing diarrhœa, and in developing from infected material outbreaks of enteric fever, and in fostering the disease in an endemic form in the locality. If the district councils continue to permit the existing unwholesome conditions, the districts will probably suffer a penalty similar to those experienced in other places where like conditions have not been removed—The endemic disease may assume epidemic proportions with a correspondingly enhanced mortality."

Old Dulwich.

THIS once pretty suburb has suffered many changes during the past few years. Amongst the buildings that have lately disappeared we may cite the old Greyhound Inn, established in the former half of the eighteenth century, and twenty years ago was pulled down the Old Manor House wherein Edward Alleyn lived when engaged upon the founding of his College of God's Gift—completed in 1619, after designs attributed to Inigo Jones. Shortly afterwards the late Charles Barry, as architect to the College estates, laid out the Manor House property, extending over fifteen acres, for the building of villa residences. Alleyn first became a landowner in the parish of Camberwell in 1605. On March 5, 1885, was sold at Messrs. Puttick & Simpson's auction rooms the reputedly genuine agreement for the leasing of lands in the Manor of Dulwich to Edward Alleyn by Sir Francis Calton, signed by both parties, and dated October 3, 1605.* Another old landmark is doomed, being Rosendale Hall, erected, it is said, in 1658, and sometimes visited by Charles II. At Rosendale Hall was discovered a medicinal spring, which became so popular that the Green Man hostelry was opened for the reception of visitors; it was subsequently occupied by Lord Chancellor Thurlow.

The New English Art Club.

IT is to be feared that a large proportion of the contents of this exhibition can only be described as curiosities, mostly of a rather unattractive character. We pass by, one after another, half-finished sketches of landscape in grimy tones, and figure-subjects and portraits in which the object seems to be to get the ugliest persons possible as sitters, or to make them as ugly as possible. The latter must be the true explanation, for we doubt if there are any as ugly women to be found in real life, at least among those who live in drawing-rooms, as are shown here in more than one picture of "An Interior," or some analogous title. Occasionally we come across a rough sketch, like that of Mr. George Thomson's of "Penrice Castle," in which the artist, like Polygnotus, seems to have thrown his sponge at the paper with a happy accidental use of the right masses of colour for a bright landscape effect from which all detail is omitted. Mr. Clarkson in "The Bean Harvest" has got an effect of light in the sky, and Mr. Alfred Thornton's "Lombard Landscape" suggests the sentiment of poplars and clouds without any commonplace realism of effect. At last the eye catches sight of a picture—an actual picture! of "The Pool" with foliage reflections, and bearing the name of a real artist, Mr. Mark Fisher, and quite in his best way. But what does such a painter as he do in this galley? We might put the same question to Mr. Furse, whose portrait of "Mr. Dodgson" is a reasonable picture; but in his larger work at the top of the room he seems unfortunately to have succumbed to the prevalent mania. Among the other pleasant exceptions are Mr. W. W. Russell's "Edge of the Forest," a landscape of some power, and the same artist's "A Holiday"; Mr. Fry's "St. George," a kind of archæological whim, but amusing and clever in its way; Mr. Conrad's half-length "Portrait" of a young lady, pretty for once, and with a quiet repose of colour and treatment; and Mr. J. Henry's "The River Bar," a small coast landscape marked by clear and atmospheric effect. What is the aim in the majority of the landscapes hung, or what kind of pleasure we are expected to find in them, it is indeed not easy to understand.

* In his "Dulwich College and Edward Alleyn" (1877), Mr. Blanch describes the deed as being the oldest document in the College respecting Alleyn's purchase of the manor. Mr. G. F. Warne's catalogue (1881) of the College MSS. says: "The original of this document has been lost.

MAGAZINES AND REVIEWS.

THE *Art Journal* contains an article by G. Montbard, illustrated by his own sketches, on "Fez, the capital of Morocco," which is to be continued. It gives us some glimpses of a little-known city. There follows an article by M. Day on "Cloth Bookbindings" and their susceptibility to artistic treatment. They can never have such a monumental appearance as stamped leather or vellum, but there is certainly no reason why artistic design should not be applied to them. Considering, however, that the material is much less lasting, the design should not attempt too much—it is not worth while. The simple design for the back of "Willow the King," gold on linen, with merely the plain but well-designed lettering and two or three bits of small spray ornament to fill up the outline of the lettering, ought to have an excellent effect (the illustration of course does not show the colour or the gold). Some of the illustrations remind one of the importance of having the feeling and style of the decoration in keeping with that of the book. The cover to "Gryll Grange," with a decorative peacock forming the prominent feature (Peacock being the author of the book), and that to "Pharos the Egyptian," with the Egyptian winged and snake-headed globe beneath, are suitable enough; but the cover for "Jacob Faithful," a conventional decorative treatment of an ancient galley, is an absurd decoration for such a modern "old salt" story of sea life, and would have puzzled Marryat very much. The special number of the *Art Journal* is devoted to the life and work of Sir John Tenniel, the letterpress by Mr. Cosmo Monkhouse; the illustrations numerous and well chosen; the pathetic cartoon "Dropping the Pilot," perhaps the most memorable of all Sir John's *Punch* illustrations, forms the frontispiece. The Paris Exhibition supplement is still continued. It serves to remind most visitors, we fear, how much there was at that wonderful show which they missed seeing.

The most interesting article in the *Magazine of Art* is that on "Decorative Art in Belgium," by M. Octave Mans. From this article it would appear that there is quite a movement in Belgium for the decorative treatment of house fronts from designs by the architects, and also for furniture and the designs of entire rooms. By the decorative treatment of house fronts we mean the application of flat ornament on spaces defined by the architectural features. The two men named as most prominent in this movement are M. Paul Hankar and M. Victor Horta. English architects should read this sketch of the modern art-movement in Belgium. There is also an illustrated article on the decorative work in the new station of the Paris and Lyons Railway Company in Paris, to which reference has before been made in these columns. In introducing landscape as decoration—views of the places connected with the Paris-Lyons railway service, some at least of the artists have been very successful by a system of combining these landscape views with an architectural style of decorative design, which forms the framework through which they are seen, so that the landscape becomes only a filling up of spaces in a decorative design the main lines of which are completely architectural. This is a far better system than merely painting a landscape in flat style on a wall and calling it decorative.

The *Architectural Review* (Boston) contains among its illustrations some portions of Messrs. Cope & Stewardson's competition design for Washington University; very pretty drawings, looking almost exactly like sketches of some old Elizabethan building in England, an effect enhanced in one of the drawings by showing the wall half-covered with ivy; an appeal to sentiment which seems hardly fair. Messrs. McKim, Mead, & White's "State Savings Bank at Detroit" is a well studied one-story Classic design looking very like a bank, shown entirely in geometrical elevation and sections; the plan, however, is wanting. It is commendably honest to show in the elevation the hipped leaded roof rising behind the balustrade, but nevertheless it spoils the look of the design, and in regard to this as well as many other

similar cases one is tempted to ask why, in these days of girders and concrete, a flat roof should not be made, and this interference with the main character of the design avoided. The balustrade is a feature which in itself suggests a flat roof, and, in fact, has little meaning apart from it. The editor takes exception to our remarks in the leading article of the New Century number of the *Builder* that the Gothic revival has run its course, and thinks that on the contrary its course has only just begun. If he lived in England he would know better. We are aware that Americans have not done with the Gothic revival; but it is certain that the English have. The principal article in the number is by an English architect, Mr. E. P. Warren, a long and interesting illustrated article on "Decorative Plaster-work."

The *Berliner Architekturwelt* contains illustrations of a considerable number of examples of recent German architecture, of which the most important is a *Kaufhaus* or mercantile warehouse by Herren Stiehl & Kampffmeyer, of Berlin; a building with a good deal of character and carefully treated in detail. The other examples are chiefly of villas and street architecture. There are also a good many designs for the interior decoration of rooms and for furniture which are of considerable interest and suggestiveness.

In *Feilden's Magazine* Mr. Twelvetrees brings to a conclusion his valuable scientific account of the construction of the Central London Railway. To the same issue Mr. W. H. Maxwell contributes an article on the important subject of "The Town Refuse Problem," and its relation to steam production. This gives valuable practical information, with sections, as to the structure and principle of various forms of refuse destructor. The article is to be continued in future issues. The main problem with which it deals is the extent to which refuse can be made commercially valuable as a heat producer.

The *Studio* (March 15) contains an article on the works of Mr. J. M. Swan, with a number of illustrations of his animal studies and paintings, and one on the curious subject of Japanese tobacco-boxes, with illustrations. An article by a lady "On Some Modern Cottages," with illustrations which are all of one school, and that the school of what we call the contrived picturesque. Articles on such subjects should be written by practical architects, not by lady amateurs, who look at the subject only from a sentimental point of view.

The *Artist* contains an article on "Bookbinding," by Mr. Kineton Parkes, with some good illustrations, and one on John Martin and his works, by Mr. E. Wake Cook, who seems to have constituted himself the champion of this pinchbeck genius. Mr. Cook seems to think one reason that Martin does not take a place alongside Turner is that he has no fair representation: "Turner's works are everywhere in evidence; Martin's might be non-existent." That is confusing cause with effect. Martin's works are nowhere because no one cares to have them.

In *Scribner* ("The Field of Art") Mr. W. H. Low gives an account of "the story of a painted ceiling" in an ordinary-sized private house, with a ceiling 13 ft. from the floor. The account of the gradual manner in which the treatment was arrived at, and the prejudices of the client softened down, is very well given, but the most interesting point in the article is the remark quoted from Puvis de Chavannes in regard to his decoration for the Hemicycle of the New Sorbonne. The story is told to illustrate the importance of being familiarised with your apartment before you set about a painting in it. What the great French decorative painter said was this:—

> "When I was asked to do the Hemicycle of the Sorbonne I arranged to pass the better part of my days in the hall and before the space which my painting was to occupy. There I stayed, studying the lighting, the proportions of my panel, its distance from the spectator, until, little by little, the vision of my picture appeared to me, so very like what I ultimately placed there that you would be astonished could you see it as I did."

The *Century* contains a picturesque and at the same time practically interesting article by Mr. Wolden Fawcett on "The Transportation of Iron," the means by which the freshly-mined ore is within a week transported twelve hundred miles, by land and sea, to the furnaces in Pennsylvania and Ohio. The following quotation gives a good idea of the scope of the article:—

> "It is a marvellous transit, this trip a third of the way across the continent, and the journey itself is not more wonderful than the vehicles in which it is made. The flying trip is made by rail, then by boat, and finally by rail again; and it might be made even more quickly were it not necessary to lose a day and a half 'changing cars,' so to speak, although in reality, of course, the transfer is from cars to the monster freight-carrying vessels of the Great Lakes, and thence back again from the leviathans of the inland seas to the metal waggons of the steamroad. Of a part of the ore it may be said that from the time it leaves the hills of the northern wilderness until it is set down in the smoky valleys that lead up from the Mississippi, not a human hand touches it. Powerful mechanical shovels, doing the work of scores of men, place it aboard the cars at the mines; gravity carries it from these ungainly carts to the hold of the fresh-water ships; and, when the voyage is ended, ponderous arms of steel, impelled by steam, delve into the hold and draw out at a swoop sufficient of the fine-grained material to fill several of the largest farm-waggons."

In the same number Mr. Birrell continues his amusing and characteristic article "Down the Rhine," in which we are asked to look at a good many things from a new point of view. He gets to Cologne in this article, and is greatly impressed with the cathedral, especially its scale. "The great door is 93 ft. high and 31 ft. wide. These figures are comforting and inviting." "The materials that go to compose the flying buttresses alone would build cottages for ten thousand men." Has Mr. Birrell worked this out, or is it only a local cicerone's tale? Scale, however, is not everything in architecure, and Mr. Birrell quits Cologne without a word for St. Gereon—a parlous omission. "Old Manor House Gardens," by Miss (or Mrs.) Nicholls, is a rhapsody on old gardens to accompany some illustrations.

The *Nineteenth Century* includes a short article by M. de Soissons on "Augustin Rodin," one of those rhapsodies in which it is now the fashion to indulge over the wrong-headed and fantastic works of a man of genius who has forsaken the paths of true art for those of sensationalism. Among other things which we are called on to bow down before is that confused and unintelligible plaster sketch called "The Gates of Hell," which was to be seen in the Rodin pavilion next the Paris Exhibition, and over which we are told the artist has been at work for ten years. Of course the preposterous so-called statue of Balzac comes in for the usual adulation. It would seem that sculptor and critics (?) have alike lost their reason.

The *Gentleman's Magazine* contains an article by Mr. Karl Blind on "Sir F. Barry's New Excavations of Brochs," those ancient and puzzling strongholds in Scotland to the remains of which special attention has recently been directed. Sir F. Barry has discovered eight in the neighbourhood of his own castle, "in places where no one had guessed their existence underground, so imperceptible did the marks on the grass-grown soil appear to the ordinary eye"; and the author, not without apparent reason, calls him "the Schliemann of Caithness." The same number contains a short article on the interesting subject of the old-fashioned "Semaphore Telegraphs," and one by Mr. J. Ellard Gore on "Recent Advances in Stellar Astronomy." He remarks on the great assistance given in recent times by the increasing number of amateur observers. One point touched upon at the close of the article is of special interest in connexion with the recently observed new star in Perseus, viz., the possible cause of these occasional outbreaks of flaming worlds. Mr. Gore supports Mr. Monck's theory, that these are dark or only faintly luminous bodies which acquire a shortlived brilliancy by rushing through some of the gaseous nebulæ which exist in space, as shooting stars take fire by rushing through our atmosphere. The comfortable reflection is added that if our own sun passed through such a mass, its heat and light would be vastly increased by the friction. In such a case there would be a literal fulfilment of the prophecy, "The earth also and the works that are therein shall be burned up."

The *Pall Mall Magazine* contains an exceedingly practical article by Sir William Richmond on London fog and smoky chimneys, the special point being to urge the unrelenting application of the power to fine proprietors of factories which are allowed to emit smoke from their chimneys, supplemented with the argument that the proprieters themselves would find more perfect combustion of their fuel a saving in the long run, and that the fines are really in their interests as well as in those of the public. He shows that in some cases the authorities who have power require a great deal of external pressure put upon them to induce them to exercise their legal powers. It appears to us however, that to head the article "The Black City" is somewhat sensational—London can look bright enough in favourable weather; and the photographs which accompany the article appear to have been purposely taken under conditions of light such as to give the greatest possible dinginess of effect. The cause does not need these adventitious aids, which are rather apt to produce the opposite effect to what is intended. The same number contains a translation of posthumous article on Millet by the late Charles Yriarte; interesting, but not marked by any thoughtful criticism as to the position which Millet will permanently occupy in art. Ultimately it will probably be recognised that the value set on Millet's work at the close of his life and after his death, has been somewhat exaggerated. The same number contains an account of the making of the Uganda railway, which has been carried on not without practical opposition from natives, white ants (which attacked the telegraph poles), and lions. One of the latter animals was found one morning on the platform of one of the carriages, apparently waiting for the train to go. As he "refused to show his ticket," and was unfriendly in his demeanour, he was promptly shot. The difficulty with the white ants was got over by transplanting living trees for telegraph-poles, which the ants do not attack.

Knowledge, as may be expected, contains an article on the new star (so-called), in respect to which there is offered a variation on Monck's theory referred to by Mr. Ellard Gore (see above), to the effect that the blaze is due not to a body like the sun passing through a nebula, but to the passage of a dense swarm of meteorites through the sparser swarm composing a nebula; "the denser swarm, on this view, is responsible for the dark line spectrum and the sparser one for the bright lines." It is expected that there will be opportunity for much further study of the spectrum of the *nova*, which may afford further evidence for one or other theory.

Moring's Quarterly contains an article, with some illustrations, on "The Roman Camp at Birdoswald," the largest camp on the line of the Roman wall.

The *Home Counties Magazine* (quarterly) contains several articles on subjects of archæological interest in the neighbourhood of London, among which "A Walk by the Brent," by Mr. J. P. Elmslie, may be specially mentioned.

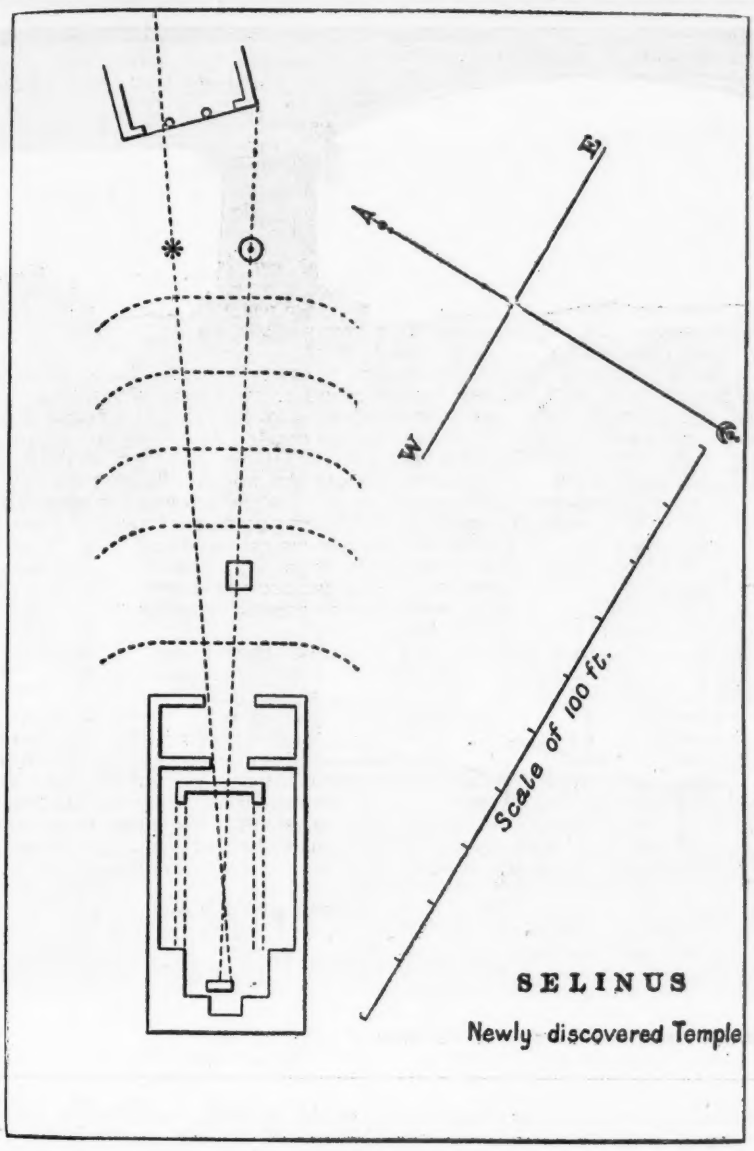
The *Quarry* contains an article on "Some Norwegian Building Stones" to which considerable additional interest is given by views of a number of buildings carried out in various varieties of Norwegian granite and stone; the material being specified beneath each illustration.

Climate, a small quarterly journal, gives an account of a rather interesting competition, initiated by the journal in question, for the best design (constructively) for a house suitable for European residents in tropical climates. They received four designs, of which what were considered the two best are published, with some particulars as to the methods and materials recommended, and the criticisms of the Committee of Selection. Those who are about to build houses in a tropical climate may find the report useful.

COMPETITIONS.

HEARTS OF OAK NEW OFFICES.—A two days' meeting of the delegates of the Hearts of Oak Benefit Society was concluded on the 9th inst. at the offices, Charlotte-street, Fitzroy-square. The Council submitted a report, which was adopted, stating that they had purchased for 36,000*l.* freeholds in Euston-road and Grafton-place as a site for new offices. They recommended that the leases of a third of the premises should be purchased for the erection forthwith of suitable offices. It was decided to offer premiums of 100*l.*, 75*l.*, and 50*l.* for the best designs of suitable buildings, the cost of which should not exceed 55,000*l.*

VOLUNTEER DRILL HALL, LEITH.—A drill hall and headquarters for the 5th V.B. Royal Scots, Leith, have been erected in Dalmeny-street, Leith. The hall is 160 ft. by 84 ft. The architect was Mr. F. G. Simon, of Messrs. Anderson, Simon & Crawford, of Edinburgh.



THE ORIENTATION OF GREEK TEMPLES.

THE following is an abstract of a paper recently read by Mr. F. C. Penrose before the Royal Society* :—

The paper contains notes on two examples from Greece and four from Sicily—of these, three are of the nature of amplification and correction, and three are fresh cases.

1. To the second head belongs a rude and archaic shrine in the Isle of Delos; not improbably the most ancient existing example of a religious structure on Greek soil. It exhibits the usual stellar connexion with its orientation and an approximate date conformable with its remote antiquity (1530 B.C.).

2. Some further observations on the Temple of Apollo, at Delphi, of which the recent complete clearance of the site admitted of measurement with greater exactness than before.

3. At Syracuse I found that the architecture of the temple, which has been erroneously attributed to Diana, was of a character much too archaic for the date assigned to it in that paper, which had been derived from the orientation of the axis; but that when taken from the northern limit of the eastern opening the date would be quite consistent both with architecture and the history of the town.

4. This led to a re-examination of the other Syracusan examples and an error was discovered, altering the orientation of the temple attributed to Minerva, and its derived date, from 815 to 550 B.C., to its great advantage in every respect.

5. The most interesting example, however, is from another Sicilian temple lately unearthed at Selinus. Of this temple I found the orientation of the eastern axis to be 30 deg. 22 min. north amplitude, which at once suggests a solar temple arranged for the summer solstice, which for a level site and for the date in question, should be 30 deg. 35 min. But the temple's site is near the bottom of a valley; and the sun would have to gain an altitude of rather more than 2½ deg. before it could shine into the temple; and then the amplitude required would be 28 deg. 17 min. Thus apart from what may be derived from the plan of the temple itself, the orientation theory would seem to show to a disadvantage. At the same time the peculiarities of the plan of the temple would be difficult to explain without the orientation theory.

Presumably the angle upon which the lines of the temple were set out was taken from data obtained on some platform which had a level horizon, and the building was considerably advanced before the actual solstice came round and showed the error that had been made.

To meet the difficulty a *naos* was constructed within the flank walls, but hugging the northern one; so that the first beam of sunrise coming through the centre of the eastern aperture, at the local amplitude of + 28° 17′ E., might shine in centrally upon the Statue of the Deity: and for this a pedestal was provided a little northwards of the centre of the niche which had been previously formed for it. We may notice also that the south-west angle of the Propylæa is so placed as to keep exactly clear of the point of sunrise.

6. An argument is drawn from the orientation of the foundations of a small temple lately discovered, adjoining the famous theatre at Taormina, that the theatre itself was that of the city of Naxos, which occupied the sea-coast at about 800 ft. immediately below it; and not the work of the much later town of Tauro-minium, from which Taormina derives its name.

* "Additional Notes on the Orientation of Greek Temples, being the Result of a Journey to Greece and Sicily in April and May, 1900." By F. C. Penrose, M.A. F.R.S. Received January 17,—Read February 14, 1901.

NEW WING, NURSES' HOME, KIRKDALE, LIVERPOOL.—On the 26th ult. a new wing, which has been built at the North Home of the Liverpool Queen Victoria District Nursing Association at Kirkdale was opened. The architects were Messrs. Rathbone & Beckett.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The members of this Association visited Sauchie and Clackmannan Towers on the afternoon of Saturday, April 6—the former through the courtesy of the Earl of Mansfield, and the latter by permission of the Marquis of Zetland. The leader at Clackmannan Tower was Mr. A. F. Balfour Paul, who gave a description of the old castle, and recalled its historical associations. The party then drove to Sauchie Tower, where Mr. John Watson acted as leader, and exhibited some measured drawings which he prepared many years ago before the topmost portion of the tower was demolished. The castle and the old cottages adjoining were then examined and described.

CARDIFF, SOUTH WALES, AND MONMOUTHSHIRE ARCHITECTS' SOCIETY.—On the 3rd inst., at the Royal Hotel, Cardiff, this Society held a supper to mark the close of the session, Mr. George Thomas, the President, being in the chair. Since the end of October the members have heard the opening address of the President and papers by the following gentlemen:—Mr. W. H. Ashford ("The Orders of Architecture"), Mr. W. H. Dashwood Caple ("Sanitary Building Construction"), Mr. A. Gladding ("Wren's City Cathedrals"), Mr. C. B. Fowler ("Interesting Portions of Ancient Architecture in the Diocese of Llandaff"), Mr. H. Sesom Hiley ("Architectural Training and Education"), Mr. J. Coates Carter, and Mr. J. H. Phillips ("Holidays on the Continent"). Among the toasts given at the supper were "The Chairman," submitted by Mr. H. S. Hiley, and responded to by Mr. George Thomas, and "The Guests," proposed by Mr. H. C. Rimell and acknowledged by Mr. W. H. Dashwood Caple, who mentioned that last year thirty Associate members were elected, and urged the desirability of the younger members of the profession settling themselves to downright work if they meant successfully to meet outside competition. A smoking concert was held after the supper.

ENGINEERING SOCIETIES.

THE INSTITUTION OF JUNIOR ENGINEERS.—The fifth lecture of the course on "Works Management" was delivered by Mr. A. H. Barker at the Westminster Palace Hotel on April 3, the Chairman of the Institution, Mr. Percival Marshall, presiding. The method of calculating piece-work prices was considered, figures relating to the product of lathes, shaping, and other machines being given, and diagrams were exhibited embodying results from actual practice. The necessity of exact records being kept relating to each process of a job was urged. Time-sheets and books were described, and the system of keeping them dealt with in detail. Reference was made to the advantages to be derived from a special rate-fixing department where devices could be submitted for executing standard jobs in the most expeditious manner in the works proper. The premium system was further alluded to, and the lecturer proceeded to the question of cost-keeping, the respective operations of the estimating and costs' office being traversed, including tabulating, book-keeping, indexing, &c. Considerations with respect to invoices in both directions were entered into, and systematic methods for the avoidance of errors, and of unbusinesslike occurrences in connexion therewith, were indicated.

PUBLIC IMPROVEMENTS, GREAT YARMOUTH.—On the 29th ult. at the Town Hall, Yarmouth, Lieut.-Colonel A. C. Smith, R.E., an inspector to the Local Government Board, held an inquiry into applications by the Corporation for permission to borrow 7,500*l.* for foreshore improvements at Gorleston, and 2,580*l.* for paving works. It was stated that the Corporation propose to acquire 2,394 ft. of cliff at Gorleston, and the slope of the cliff for the same length. The top of the cliff was to be levelled and laid out as a promenade, and the cliffs would be sloped off down to the beach, giving a gradual approach. The existing concrete sea-wall at the foot would be extended. The Corporation would have the right to erect shelters and lavatories, pavilions, and other structures below the level of the sky-line, but on the top of the cliff nothing must be erected that would obstruct the view from houses that might be erected on an estate on the cliff. Evidence was given by the Borough Surveyor. The paving works loan was for the formation of concrete paths in place of existing gravel paths.

Formal Garden seen from Colonnaded Vestibule

THE ARCHITECT AND THE GARDEN.*

WHEN our late Hon. Sec. first asked me to read a paper before the Discussion Section I told him that it was not possible for me to rise to the high level required, but, like the importunate widow, he refused to take "No" for an answer, and at last, weakly, I gave in.

If I thought it a difficult matter a year ago, much more have I found it so now, when so much has been said and written on the subject of gardens, and when there is at the present time a distinct and almost general revival of garden craft and design. I must, therefore, beg you not to expect anything new or original from me either in fact or theory. All I have endeavoured to do is to again call fresh attention to the intimate relation between the house and the garden, and, therefore, consequently between the house designer or architect and the garden.

That these important relations are almost entirely overlooked or unknown by the general public is, I think, a truism which we all realise, but it seems to me more than possible that this ignorance is, perhaps, due to the architect himself, who has in the past failed to make use of opportunities which must present themselves to him when he is called in to design a new home or, perhaps, to alter an old one. I mean architects generally as a body have failed to study garden craft and garden design, or to realise how great is the connexion between house and garden from both the practical and æsthetic point of view.

The vast number of amateur (so-called) garden books, the several excellent architectural ones written within the last few years, and the more or less ready sale which they command are sufficient evidence of the awakening interest which is being aroused, both in the public and professionally, in this, to me, most fascinating of all the allied branches of our art. It behoves us, therefore, to be on our guard, and to be fully prepared with reasons why the architect's jurisdiction should extend to the garden, and to see that our knowledge is founded upon sound principles.

I do not propose, therefore, to go much into the question of garden design, or what may be right or wrong in garden design. I would rather dare to paraphrase Kipling's ballad, "In the Neolithic Age," and say "There are nine and sixty ways of constructing garden lays, and every single one of them is right"—so long as we keep before us the spirit of the old English garden, and understand the principles which underlay its formation and development, and realise the reasons why an architect's education should include a study of garden craft. Perhaps here, at the outset, I had better say what I personally conceive those underlying principles to be.

First of all, then, I shall say *seclusion*. For if this was not the great aim of the old gardeners, it is an end which has certainly been attained; and it is at least interesting to find that the original meaning of the word garden in almost every language was "an enclosed space," and in the Greek word "kortos" a secondary meaning was a feeding-place. The brick wall with its green crusted coping, the close-clipped hedge, defying the prying eyes of the curious, high trellis-work with its entwining creepers, all point to this end, and while serving the useful purpose of giving shelter to fruit and flower, wraps the whole garden with a tranquil air of seclusion, security, and mystery. This was well understood in the seventeenth century, and is, I think, clearly the reason why Georgian houses were so often placed close to the road in order to give more space and seclusion to the gardens lying behind them.

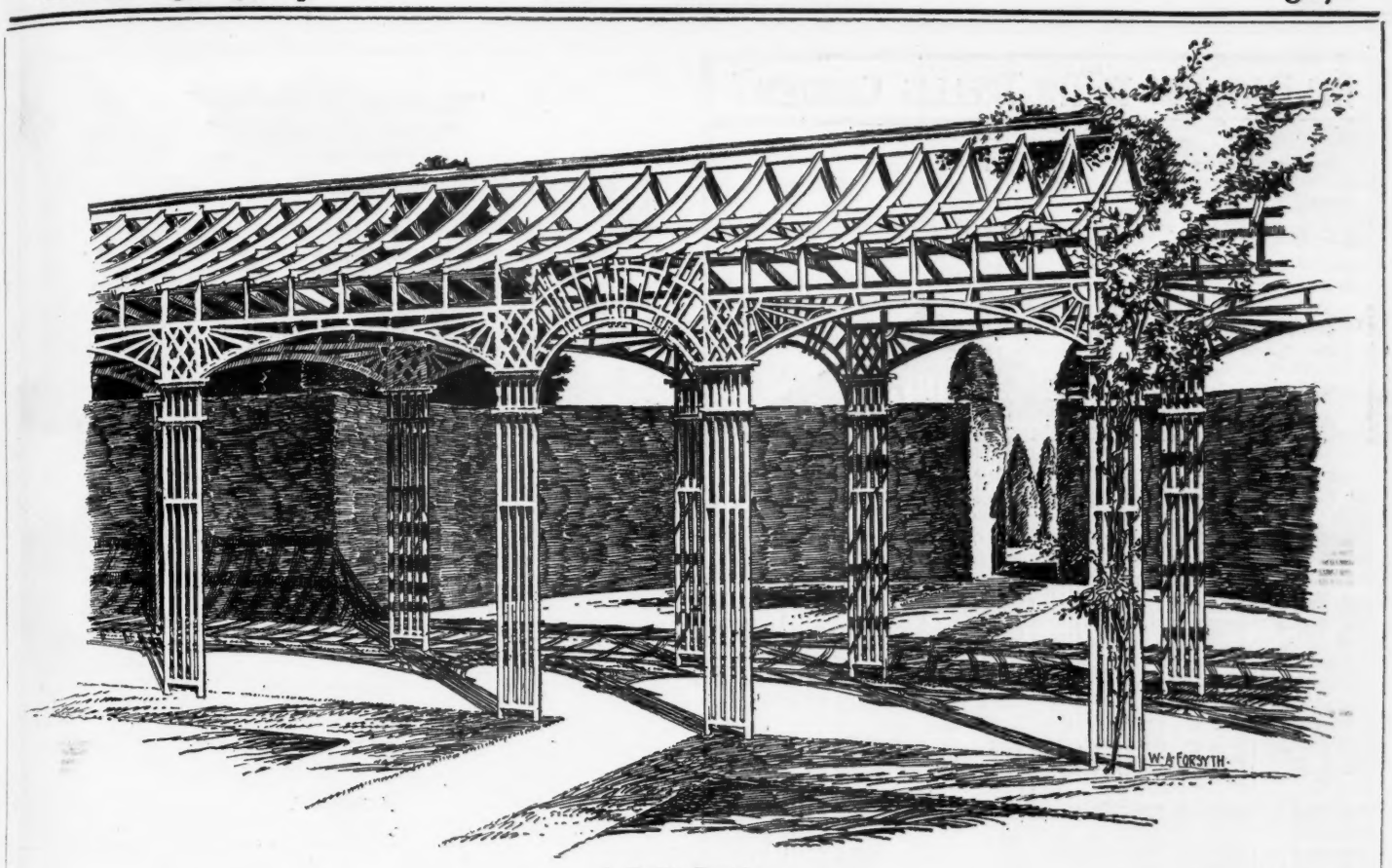
After seclusion comes *use*. Gardens were not made merely for pleasure, but to provide the home with necessities and delicacies elsewhere unattainable. Fruit growing was a fine art. The bakehouse, brewhouse, game larder, fishpond, dovecote, herb garden, walled fruit garden, orchard, quincuna, and stillroom were necessities, and not merely evolved out of playful fancy.

For instance, there is, I think, no doubt that the fishpond or tank owed its origin in mediæval Catholic England to the demand for fish, and hence the development and charming treatment of these ponds in later times. The ladies of the household were experts in all that pertained to garden produce, and the recipes of our great-great-grandmothers would probably considerably astonish their twentieth century descendants. The old-fashioned herb garden must not be forgotten. The culture and curing of "simples" was formerly part of a lady's education, and gardens were ofttimes renowned for this feature alone. Evelyn says, "We walked into a large garden esteemed for its furniture, one of the fairest, especially for simples and exotics." Then also the necessity for good, dry paths and terraces, for it was in the garden that exercise was "largely taken." Roads were few and bad, and ladies no doubt disliked mud as much then as now.

The garden was therefore an integral part of the home—indeed, an absolute necessity—for modern conditions were unknown, and if the household was not self-supporting it could barely exist. Thus garden and house grew up and were designed together, for each was the complement of the other. Thus, I think that the keynote may be said to have been necessity, to which was doubtless added a real love of beauty for its own sake, prompting those quaint fancies which help to enhance the charm and discount the utilitarianism which really lay at the root of all. Necessity and pleasure thus walked hand in hand, the former, by its "directfulness," giving the cue to the sturdy formality and strength of purpose which so appeals to us now. The natural result was a happy blending of pleasure and use until, by the simple process of evolution, the original uses were no longer required, and therefore not understood and misapplied, and the way then stood open for the chaos and futility of Capability Brown and his evil school.

Some slight consideration of the original cause of the development of the garden leads us clearly to the fact that the garden was necessary for the home life; that fruit, flowers, walks, turf bowling-greens, shelter and seclusion were the natural outcome of the household requirements, and so house and garden became wedded, as it were, into one, each dependent on the other, with logical purpose governing both. Each thus gaining from the close and living contact with the other, they finally became that perfect whole, which we can doubtless conjure up before our eyes. The greystone or purple

* A paper by Mr. H. P. G. Maule, read before the Discussion Section of the Architectural Association on the 13th ult.



A Trellis Pergola.

brick weather-beaten house, the trim well-kept walks, the velvet turf, the checkered play of light and shade on grass, yew, and gravel. The quaint old-world flowers, coming and going again and again, year after year, in their old familiar places beside the stained and lichened wall, with its kindly shelter from the northern winds. The sundial with its happy phrase, perhaps some little sunken garden, secluded and more sacred than the rest, with the flash of its cool fountain. Last, but by no means least, the generous fruit garden and orchard, delighting equally in sight and taste. But no words of mine can adequately describe the limitless possibilities which are to be found. The result we know, that happy blending of house and garden, which is the outcome, not merely of chance and time, but of steadfast purpose and well-trained organised design, born in the days when gardening was a loving craft worthy to be followed, loved, and understood by the noblest minds.

In effect, then, these three—seclusion, usefulness, and pleasure, are what I conceive to be the principles underlying the old tradition and examples.

The question we must next ask ourselves is this—Do these principles still hold good; are the same necessities still in existence; can we after making all due allowance for the lapse of centuries and rapid growth of modern requirements, still say that the same factors should form the basis of good garden design in this twentieth century, and, if so, how is the architect thereby affected? At first sight it may appear that as the old order changeth, giving place to new, so we must search for new essentials upon which to found the lines of a logically designed modern garden; but a little consideration will, I think, show that in reality almost all the old conditions should apply at the present time.

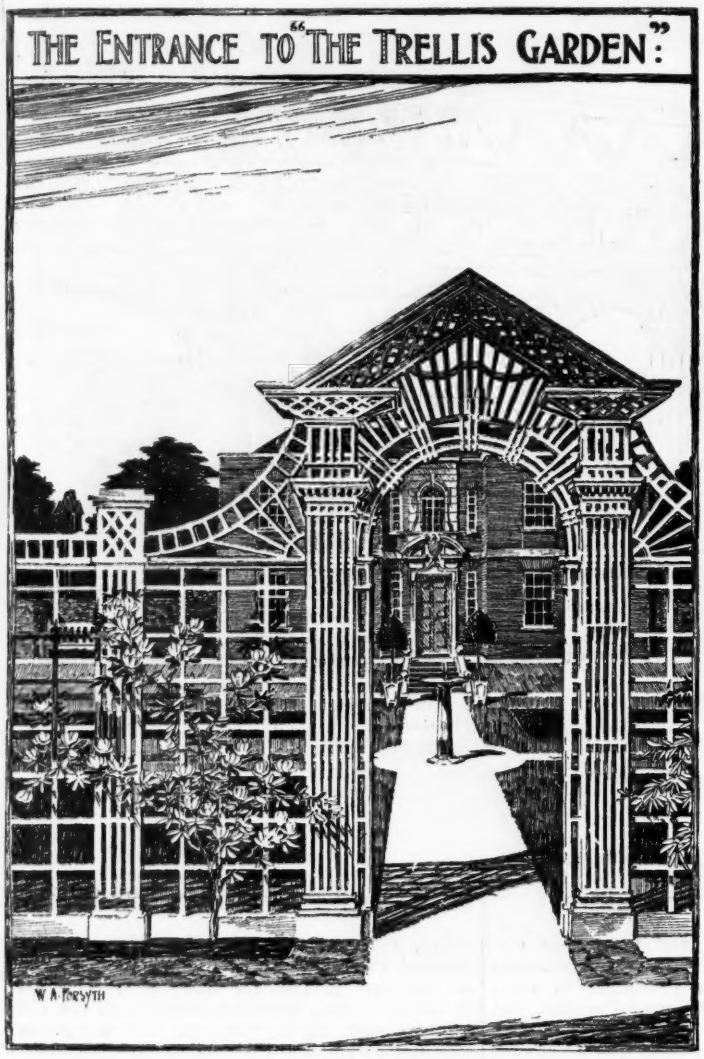
First, *seclusion*. I should say that in these days of publicity, of interviewers, photographers, cheap magazines, and general social scramble, never was the quiet calm of the garden more desirable. The greater number of houses, and the greater chances of being overlooked by near neighbours, serve to make strongly defined boundaries, which will act as screens, even more imperative than ever, and thus we have ample excuse for "high-walled gardens green and old," hedges thick and trim, and well designed trellis as bounding lines.

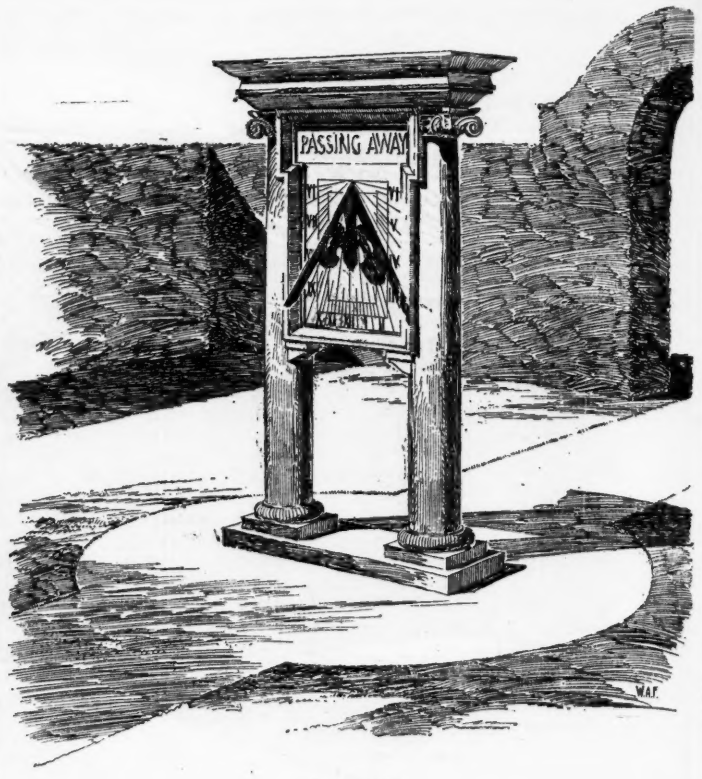
Of the usefulness and necessity of a garden the need is still the same, though perhaps at first sight not so apparent, and the reasons are more psychological than materialistic. Different kinds of fruit and vegetables can probably be bought from the greengrocer as cheaply as they can be produced in most private gardens, certainly near London, but the demand for them is greater than ever. Jam and pickle factories have done away with the absolute necessity for home growing, but I think every one will agree that home-made jams are far superior. I am sure that few people realise how much can be done and how much pleasure obtained from even a limited number of well-cared-for fruit trees, and what is more beautiful than an apple or pear orchard either in early summer or autumn? Then, too, there are many trees such as mulberry, quince, medlar, cherry, plum, filbert, which are full of delight to the eye, and useful as well, which planted with discernment will give pleasure to generations. Although sociology hardly comes within the scope of this paper, and without going quite as far as Voltaire's "Candide" and saying "Let us cultivate our garden, for that comprises the whole duty of man," I am certain that if nowadays, gardening, not merely flower gardening but honest fruit and vegetable growing with the accompanying culinary knowledge, was better understood and followed, as our forefathers followed it, the modern cry of broken nerves and jaded energies would not be so much in evidence, both for men and women—and the everlasting cry for amusement and excitement might somewhat abate. There is no recreation more healthful than gardening, and health is the ground plan of all that is worth having in life.

There is one other point I must touch upon in connexion with the necessity of the garden, and that is its educational influence, especially upon children. In these days, when so many time-honoured fallacies have had to succumb to modern science, there is no better way of teaching scientific truths and imparting a true system of observation of nature than by means of the well-ordered garden—of the joy of the "pleasure garden" there can be no doubt. Bowling greens have given place to tennis and croquet lawns, but that is only in the course of the natural evolution of physical recreation, which has become more imperative and vigorous. The love and desire for sweet-smelling, beautiful flowers and dry walks—indeed, all the pleasing fancies of the old gardens are strong as ever, and, surely, we moderns of the twentieth century, with all our increased knowledge and vaunted cultivation, should be able to appreciate the pleasure part of the garden, and derive moral and physical good from it as much as our ancestors. Without wearying you further then, it is my belief, that after making allowance for the gradual evolution of certain old forms, such as bowling greens, to modern ones, such as tennis lawns, speaking broadly, all the old essentials are still in existence. If some are in modified forms, and if some have dropped out, others have made their appearance, and, therefore, the same factors or their modified or more highly specialised descendants still govern garden design. The house and garden still require each other to make the home one perfect whole. Each must fit in with the other, and each must be in most cases subject to some special circumstance of site and locality.

Who, then, is so fitted to bring this about as the man who designs the house? He it is who must have a hand in the laying out of the garden, or, as I hope to show, points may be missed, and full advantage of the site may be lost, and so the chance of welding together house and garden through some happy accident of nature may be missed for ever. How, then, can we convince our clients that one mind should control the two? The end can only be achieved by taking our client (or more often his wife) with us. He probably has no conception that we look upon the garden as our province, and care must be exercised in approaching the subject. If he is a careful man, or anxious of expense, it may be well to approach the garden from the materialistic point of view. Point out the desirability of determining where surplus earth may be removed at one hauling, and thus save labour, and form your broad lines all in once. The making of paths from old material may be suggested, or the position of the carriage drive if the house is to have one. If by some such means the ice can be broken and the rude shock got over of finding that the architect wants to have some hand in the external surroundings of the house, then, perhaps, the rest may be plain sailing, and if the man or woman has any real love of the garden, out it will come, and the resulting garden should express not so much your individuality as in the house, but the owner's, directed by a trained mind, but still expressing, and that, too, decidedly, the owner's particular quips and cranks.

If, however, he is still untouched by the revival, and is a "wobbly-walk" man, then indeed our labours are hard, but it is well to remember that mostly these men are such from want of knowing better, and a little tact and an *apparently* unstudied introduction to "The Formal Garden in England," may work wonders, and all may be well in the end.





A Sundial.

Most people are open to argument, and the arguments in favour of formal lines and well-defined boundaries are so well known that no more than a passing reference is needed here. Moreover, the back of the old opposition is broken, and the architect will chiefly have to make good his claim to the right to settle the main lines of the garden scheme.

Before, however, he can scheme anything there are certain facts he must know. First of all comes the question of garden labour. He must ascertain exactly what amount of labour will be kept, for upon this hangs in reality the whole scheme. It is suicidal to design a garden which requires the time of four men to keep it in proper order if only two are to be kept, and the evil has two results. First, your garden will never look well, it will be untidy; and secondly, the owner will never feel satisfied, and will either be compelled to employ more labour than he can well afford, or else put up with the evil of an understaffed garden. In either case he will blame the designer, who assumed a responsibility without due knowledge.

The chief charm of a real garden is, I think, shown in the care which is taken of it. If the turf verges are shaggy and ill-kept the charm of line is gone, and the feeling of love and care which should be induced will be wanting. I know a garden, and I say garden advisedly, which is only some 16 ft. by 20 ft., and yet year in and year out it is the pride of a village, and that solely by reason of the love and care bestowed on it by its cottage owner. I know also gardens which are gardens in name only, because they are too ambitious for the staff, and therefore paths become weedy and turf gets dull for want of sufficient attention. These may sound great platitudes, and be well known, but it is so easy to draw on plans gravel walks, grass borders, and sunken lawns, forgetting all the while that walks want constant attention, and that grass borders and slopes especially require plenty of labour in summer if their true value is to be obtained. Grass particularly only looks its best when it is incessantly rolled and mown, and rolling and mowing, I know from practical experience, take time, even for a small quantity. Therefore, above all else, first find out how much labour will be kept, and cut your garden accordingly. Some excellent practical advice on the subject of garden labour is given in Mr. Mawson's "Art and Craft of Garden Making," but the best way of arriving at a reasonable judgment is to carry in our minds some garden or gardens we know well and the number of men who are employed, comparing the results obtained with the size of the garden and using our knowledge when designing.

Having discussed preliminaries and discovered the trend of our client's garden mind—if, fortunately, he has one—the choice of the actual position and aspect of the house will largely depend upon the result arrived at, especially, perhaps, if the site is a hilly one. For instance, we might choose a level site for a lawn to avoid expense in moving earth, and the position thus chosen might affect the house considerably, for often it is far better to take old meadow turf in hand, to work, roll, and mow it, in fact, rather than to sow afresh, especially where time is an object and where a newly turfed or sown lawn would be a considerable drawback to the early enjoyment of the garden. For turfing and sowing can only be done at certain seasons, viz., spring and autumn, and then the result depends largely upon weather, which is chance. Nothing so makes or mars the appearance of a garden as good or bad turf.

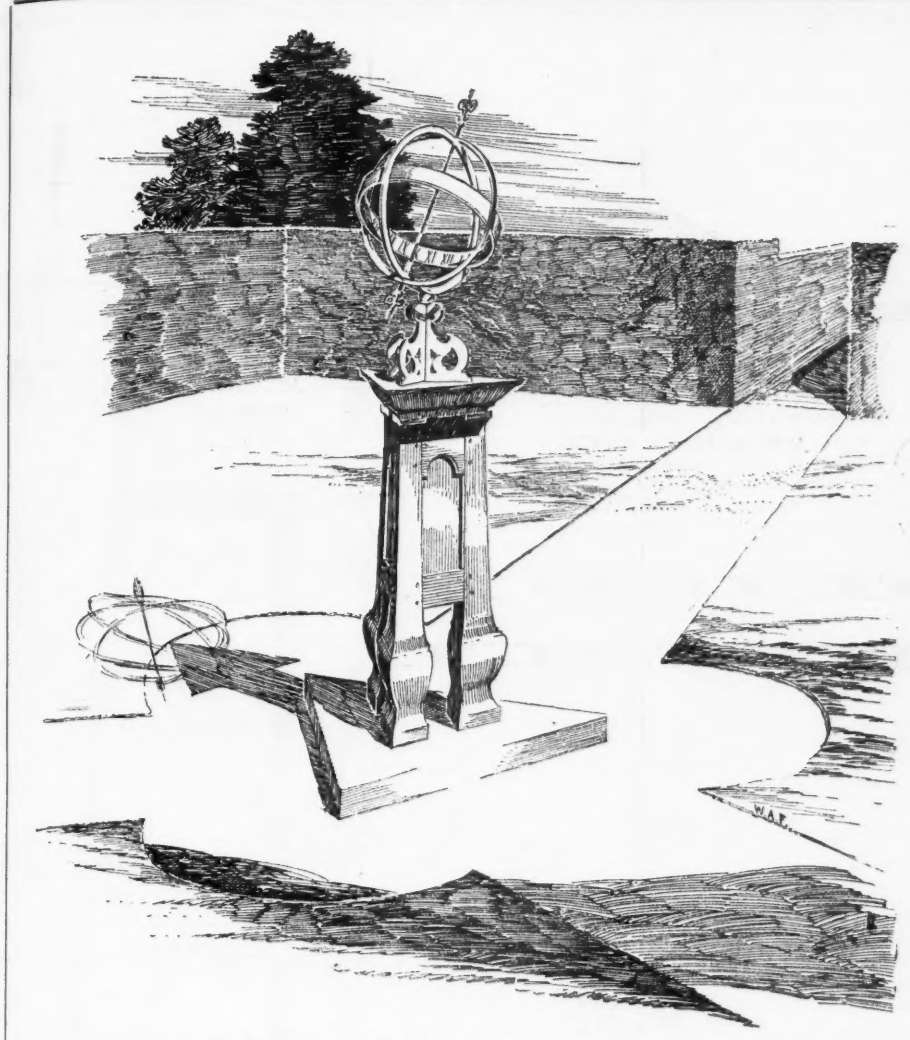
A fall in the ground or an old hedgerow may be utilised for a terrace, but it is not necessary to enumerate all the possibilities. Generally some characteristic of the country side or natural feature on the site which may lend itself to our gain can be seized upon, and which may influence or modify both house and garden, proving how essential it is that the architect should have the necessary knowledge to turn the accidental peculiarities of the site to the best advantage. If he merely settles the aspect and plants the house down upon the site without thought of the garden, it seems to me obvious that chances will again and again be missed of making some special point or feature which will stamp the future home with an individuality all its own.

Surely, then, each site must be treated on its own merits before the house is built, and it needs no imagination to see that to do this properly house and garden must be considered together and at the same time.

It must not be forgotten that in almost all gardens there is a chance and opportunity—indeed, a necessity—for some architectural features which it is essential the architect should design or control. It is here that the modern garden designer and horticulturist necessarily fails. He has not had, in most cases, the requisite architectural training, and not having designed the house, he perforce loses that sympathetic link in detail which the architect would impart, and thereby still further blend in harmony house and garden. The old gardens were full of architecture, and such buildings as tool-houses, potting-sheds, root-houses, stone steps and balustrades, summer-houses, dovecots, seats, and thoughtful trellis work—features in them—are required still, and if used with restraint will help to add human interest. But here again the necessity for them should be the keynote. Do not let us introduce them simply to make "features." If a seat is desired it will work its way into the design, and by its presence add to the garden's beauty. The sun-dial, though apparently no longer a necessity (in these Grimthorpian days), is most fascinating, and if used rightly will set our thoughts working and lend just that touch of romance which is needful to both eye and memory. Above all, let us keep garden architecture simple both in form and feeling. It is not what we put in so much as what is left out that sets the seal on the perfect garden, and this is a point I particularly want to emphasise. The old formal garden had almost degenerated into grotesqueness by the eighteenth century from over-elaboration. Bacon's advice, "Be not too busy or full of worke," had been forgotten. Let us keep this and Sedding's maxim, "All is fine that is fit," well in mind, and see that we fall not into the like mistake.

Thus far I have dwelt only with the main principles upon which I conceive garden design was founded in the past, their application to modern conditions, and some reasons why the architect should be a garden designer. The architect's knowledge, however, must extend further than this. He must have a knowledge of garden craft. He must know and love the materials he has to design with—namely, the flowers, grass, trees, and herbs. He must have an eye to the fall and lie of land, and the differences of soil and aspect, and be fully alive to the fact that a garden is a living, growing thing, pulsating with life, and not the outcome of a geometric paper design made by a man who knows naught of his materials.

So much has been said lately about gardens from the practical point of view (and I would especially call to your attention a paper by



A Sundial: Designed by Mr. A. N. Prentice.

Mr. Mawson, read before the Birmingham Association, which appeared in the *Builder* for January 19 this year) that I know I could only cover the same ground, and in a far less able manner; but some points may be mentioned as being typical and also as essential for us to know. I will mention them briefly, only saying that experience and constant inquiry whenever opportunities occur are the best means of gaining that practical knowledge which it is absolutely necessary for us to have if we are to cope successfully with garden design.

First, then, soils and drainage. Obviously the latter depends upon the former, and until considerable practice has given us knowledge I would suggest that we first of all ascertain what is the local custom as to treating the soil, and how much or how little drainage is required. Mr. Mawson says that "unprepared soil is the cause of almost all garden failures."

Secondly, we must discover what grows well in the neighbourhood, for it is no use designing and planting trees or boundaries which will not grow successfully in the locality, necessitating planting being done again after some years and at a time when some considerable show and growth should have been the result of our efforts.

Thirdly, botanical or horticultural knowledge. I do not think it at all necessary for us to go very deeply into this question, but what we must do is to know something of the times and seasons at which the flowers we propose to use will make their richest appearance. We need not know the best way to make them grow, but may presume that will be done for us. Observation and a garden notebook will teach us much.

Good, well-made, dry paths and walks are a practical necessity, for wheeling soon cuts them up unless the foundations have been well prepared. Fruit and flower gardens must have sun and must have shelter, or plants will not grow, and early and late frosts will do a vast deal of unnecessary damage.

The house-drainage scheme must not be overlooked, and advantage should be taken of all manurial products.

In effect, then, the burden of my paper is this: House and garden must not be severed, but must be treated together, and be the product of one mind—the architect's. He may scheme his garden as he pleases so long as it is subordinated to the house, and he always keeps before him its fundamental uses and objects—seclusion, usefulness, and pleasure.

Thus I have endeavoured to link architect and garden together, and the knowledge he will have to make his own will be the most satisfying and delightful of all his education. If in building materials we are brought in contact with Nature that is dead and gone, in the garden we are face to face with living Nature herself, and the more we know of her, the more we shall love her "myriad ways."

I have now but to ask you to "piece out the imperfections with your thoughts," and to make yours the ideal I have tried to keep before my own eyes—

> "A garden bower'd close
> With plaited alleys of the trailing rose,
> Long alleys falling down to twilight grots,
> Or opening upon level plots
> Of crowned lilies, standing near
> Purple-spiked lavender:
> Whither in after life retired
> From brawling storms,
> From weary wind,
> With youthful fancy reinspired,
> We may hold converse with all forms
> Of the many-sided mind,
> And those whom passion hath not blinded,
> Subtle-thoughted, myriad-minded."

Re-opening of Tacket-street Congregational Chapel, Ipswich.—Tacket-street Congregational Chapel, Ipswich, was opened on the 21st ult. after undergoing extensive alterations and additions. The end galleries from behind the pulpit have been removed, with the vestries which were underneath them, the side galleries having been carried up to the end wall. The organ has been reconstructed and refixed on the ground floor. The east window has been raised and filled with stained glass. The additions consist of a church parlour, deacons' and ministers' vestries, lavatories, and a kitchen. The church parlour, which has been named the Langston Hall, is 32 ft. 6 in. by 24 ft., and has a recessed platform 14 ft. by 5 ft. The architects for the alterations were Messrs. Eade & Johns, Ipswich. Mr. Fred. Bennett was the contractor.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS.

On Saturday, March 30, a visit was paid to the Prudential Assurance Company's new offices in Holborn. Last session the Association were much interested when this immense addition to the old building was in the earlier period of its construction, and this second visit was all the more instructive, as it is now possible to see the more fully-developed scheme, and in a measure to gauge the working of the new building with the old.

The whole of the block is to be used entirely by the company for their own offices, and in many respects the thought and consideration given to the employees is a remarkable evidence of what can be done by skilful planning.

The general character of the work has been previously dealt with in these columns. The excellence of the materials used and the quality of the workmanship leave nothing to be desired.

The central tower is the principal feature of the Holborn front, and will give an added effect to the now familiar lines of the present offices.

Mr. Paul Waterhouse, in conducting the visitors round, made some interesting remarks with regard to certain processes in connexion with the Faïence work. It may be of interest to note that during the excavations some beautifully iridescent glass sack bottles and flagons were found, dating back to the fifteenth or sixteenth century.

Illustrations.

NORWICH UNION LIFE INSURANCE NEW HEAD OFFICES.

The directors of the Norwich Union Life Office recently invited a few architects in London, Norwich, and elsewhere to send in plans for new head office buildings which they proposed to build in Surrey-street, Norwich. The design which they selected, and which is to be carried out, was submitted by Messrs. Geo. J. Skipper and F. W. Skipper, architects, of Norwich.

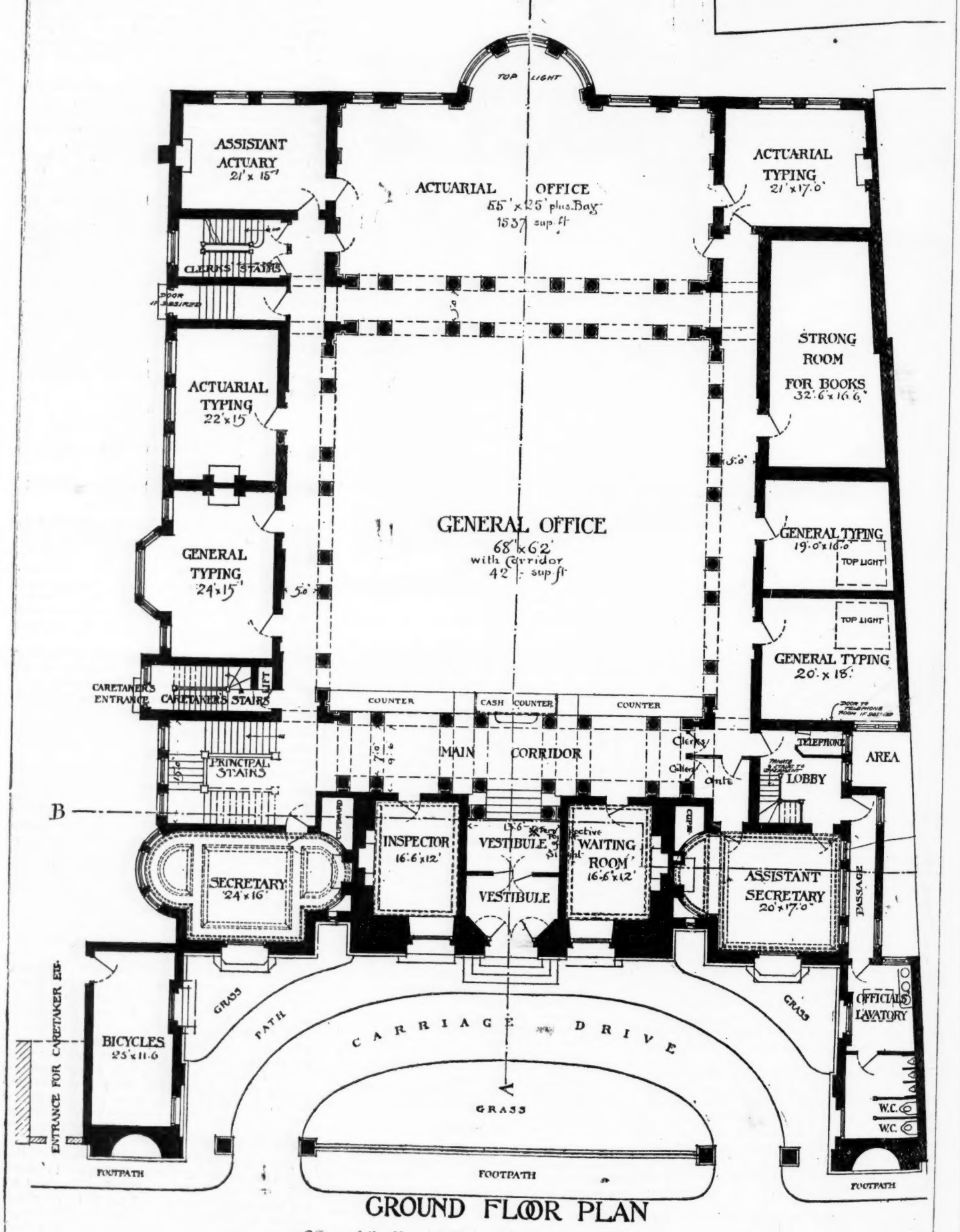
The instructions issued to the competing architects were clearly and concisely drawn up, and the conditions were framed in a very proper spirit; no limit to cost was imposed (though cost was to be a consideration), the building was to have but little carved enrichment, and all plans and drawings submitted were to be strictly uncoloured.

The requirements included a large general office or hall on the ground floor, as well as the other necessary smaller offices. In the design we illustrate this general office has been made the chief feature of interest inside the building, the other offices and rooms being placed round it. The plan explains how this idea has been expressed. The necessity for providing ready facility for getting from the central hall to the other rooms grouped round it suggested the open colonnade on the ground floor. On the upper floor many of the rooms are to be used by the directors, and consequently greater privacy was needed for the corridor surrounding the large hall; this was carefully considered in contriving this floor, and the corridor, although sufficiently retired, has yet been kept as an integral and visible part of the large hall. The solicitor's department occupies two sides of the upper plan, and the staircase arranged in the centre of this group of offices connects this department as closely as possible with the actuarial offices below, and at the same time provides direct and easy access for the clerks to their luncheon-room, which is situated immediately below in the basement.

The boardroom and committee-rooms on the first floor are set back from the street to avoid nuisance from street noises, dust, &c., and to the boardroom top lighting has been provided so that the room can be perfectly lighted even if the windows to the street are entirely closed or shaded.

The impossibility of placing windows on the boundary of the site on the right-hand side has necessitated top lighting in some cases, but this method has been used as sparingly as possible, and only to some of the lesser offices and where its use could be turned to architectural advantage.

The caretaker's kitchen (on the second floor)



GROUND FLOOR PLAN

Offices of the Norwich Union Life Insurance Society.

is large enough to provide cold luncheons for the staff luncheon-room in the basement, with which it communicates directly by a lift next to the caretaker's stairs; the luncheons for the directors are otherwise provided for. The strong-rooms (with directors' examining-room adjoining) in the basement are entirely separated from other parts of that floor, and have a special staircase leading to them from the ground floor.

The general character of the elevation was considered with a view to giving a dignified "head office," and one that would harmonise with its surroundings in Surrey-street. The whole of the exterior shown in the view is proposed to be built in Portland stone.

The figures in the niches on either side of the main façade are designed to maintain the historic associations of the present Life Office, that to the left hand bearing the date 1706, when the Amicable Life Office, which is incor-

porated with the present office, was founded, and that on the right hand, in the dress of George III.'s time, bearing the date of the founding of the Norwich Union Office, 1808.

It is proposed to construct the building throughout, from basement to roof, of fireproof materials. The ventilation and warming will be arranged on modern principles.

THE GUILDHALL, EXETER.

THE well-known ancient Guildhall of Exeter is situated in the High-street, a main thoroughfare of one of the three oldest and most historical cities in England. The High-street is very picturesque, containing many quaint timber fronts standing side by side with modern buildings, chiefly occupied as shops and offices. The most conspicuous building is the "Old Guildhall," with its Renaissance front, which is one of the most striking examples of a Town Hall that exist in this country. The hall itself is a very ancient building, with an open timber roof and a panelled wainscot dado about 9 ft. high, and was formerly a chapel dedicated to St. George and St. John the Baptist, and rebuilt in 1466. On its walls are numerous coats of arms of mayors, recorders, and benefactors, and numerous portraits, including one of George II., by Hudson; also the Princess Henrietta Maria and General Monk, by Sir Peter Lely. The cap of maintenance and the State sword, which was presented to the Corporation by Henry VII., and another sword presented by Edward IV., are among the civic treasures kept at the Guildhall.

In 1588 the present Beer stone front was added, consisting of an arcade of three arches carried on massive granite columns with caps and bases all in one piece. Above the arches is a frieze of raised panels and a cornice, then another series of panels. On the return elevations the city crest occurs, which at one time was picked out in red, yellow, and blue. Between the first-floor windows, standing on massive corbels, are pairs of Corinthian columns, with rudely-carved caps, supporting an entablature with a modern wooden balustrade above.

Until about forty years ago the front was periodically cleaned down and coloured cream colour, the frieze, flutes to columns, and sinkings being picked out in red, the columns being gilded, as traces of gold were visible before the recent restorations were made.

Not until the ancient building had been thoroughly opened out by the removal of the flooring and panelling around the walls of the Council Chamber and the flooring of the room above was it fully realised how dangerous the whole structure had become; indeed, it was then a matter for general surprise that the building could stand in such a serious condition, for the once massive beams of oak upon which the main part of the projecting portico was originally built had become so decayed that only dust remained. Fortunately this part of the edifice had been externally supported with centering and strutting in a very careful manner, under the direction of Mr. William Weir, the supervising architect representing the S.P.A.B.

In place of these beams lintels of tile set in cement were inserted, built slightly on the camber, and the internal masonry above carefully drawn out in sections and rebuilt. To brace the building iron tie rods have been placed both straight and diagonally at the floor level. The 18-in. square oak beams of the floor of the upper room were found, through decay, to have lost their bearing on the front wall, and they were, therefore, without any support except at their other ends, some 30 ft. northwards. To pick these up a truss was formed of teak to fill the entire gables of the front with a bearing on the main east and west walls. The beams beneath the main flat were also decayed, and have been replaced with many tons of English oak and securely tied back to the main building. Teak stanchions have been introduced from floor to floor in order to stay further movement of the front, gun-metal straps being placed around the piers of masonry between the windows and bolted back to them. The two main roofs, the bell turret and its roof, have all been reconstructed, the principals strengthened and left where found sufficiently sound, the remainder renewed in English oak.

The rotten slating to roofs, held together with tar and sand, has been replaced with rough thick slates from the Delabole quarries. All the old lead has been recast in sheets of 8 lb. to the foot, and relaid on main flat, gutters, ridges, and flashings, and the flats protected with snowboards. The chimney is rebuilt in Thorverton stone, and the fronts of trussed gables and bell turret are covered with rough cast. A new oak floor of double thickness has been laid in the Council Chamber (now used as the Mayor's parlour), and the walls panelled in oak. The ancient fireplace in this room was exposed when the modern mantel was removed, the massive jambs of Thorverton stone being found in a good state of preservation; the lintels and hearth were renewed in the same stone. The interesting bit of fresco which adorned the wall around the fireplace has been carefully preserved. The old glass of the five-front transomed windows has been releaded and refixed. The preservation of the exterior stonework of the Beer stone front has been effected in a very conservative manner, and only where structurally necessary has new stone from the Portland quarry been inserted. All the loose jointing throughout has been thoroughly grouted, and loose portions of stonework rebuilt. The top beds of the projecting string courses have also been protected with lead flashings, the whole surface being finally treated with a preservative.

The basement beneath the pavement level was also taken in hand; the beams and joints supporting the stone flagging were in a very decayed condition, and have been replaced with brick arches and the flagging relaid. The whole of the work has been carried out by Mr. Herbert Read, of Exeter.

JAMES H. SHEARER.

VARIOUS EXAMPLES OF APPLIED DESIGN.

THESE examples of design applied to objects of practical use were all photographed from the collection of work in Mr. Montague Fordham's showroom in Maddox-street.

Fig. 1 shows a silver tea-pot, hot-water and cream jugs, designed by Mr. Arthur S. Dixon, and executed at the Birmingham Guild of Handicraft. These pieces of silver are hammered work, and, the hammer marks not being polished off, a surface full of character remains.

Fig. 2 is a jewel-case, in gesso, designed by Mr. J. Paul Cooper. The raised figures, which are white, symbolise these various jewels; the rest of the outside of the box is a rich blue. The gold key is a fine piece of work.

Fig. 3 is a fire screen, in ironwork, designed by Mr. Percy S. Worthington, architect, and executed under his direction. The framework, of hammered iron, is finished half black. The lattice is made with threefold iron wire.

Fig. 4 is a kettle, of the same set as the three pieces of silver (fig. 1).

Fig. 5 is a brass electrolier, from the workshops of the Birmingham Guild of Handicraft.

Fig. 6 shows some china vases and candlesticks, by the Misses Lucas. This china is made under the direction of the Misses Lucas, and hand-painted by them.

INTERNATIONAL BUILDING TRADES' EXHIBITION.

THE following is a list of fixtures to be held during the time the Exhibition remains open, from April 17 to 27 :—

Friday, April 19.—Visit of Institute of Builders.

Saturday.—Visit of Architectural Association.

Wednesday, 24th.—Visit of Institute of Sanitary Engineers.

Thursday, 25th.—Annual meeting and dinner of Institute of Clayworkers.

Friday, 26th, 4 o'clock.—Conference on standardising of bricks.

In respect to the standardising of bricks, this Conference has been arranged jointly by the Royal Institute of British Architects, the Institution of Civil Engineers, and the Institute of Clayworkers. The chair will be taken by Mr. Thos. Blashill, F.R.I.B.A. Any one desirous of attending this meeting may obtain admission to the Hall upon application to 43, Essex-street, W.C. A party of Germans, numbering fifty, engaged in the building industries, will pay a ten days visit to England for the purpose of seeing the Exhibition. They will be entertained at a banquet in the hall by the Institute of Clayworkers, on the evening of Thursday, the 25th inst.

THE INSTITUTION OF CIVIL ENGINEERS.

AT the ordinary meeting on Tuesday, April 2, Mr. James Mansergh, President, in the chair, the paper read was "The Burrator Works for the Water Supply of Plymouth," by Mr. Edward Sandeman, M.Inst.C.E.

He said the waterworks of Plymouth dated from 1590, in which year Sir Francis Drake, under powers conferred by an Act of Parliament of 1585, had commenced to build a weir on the river Mewe or Meavy, and to excavate an open watercourse or leat from the weir to Plymouth, a distance of 10½ miles in a direct line, but 18¾ miles along the route taken. The drainage area above the weir was 4,885 acres. The work had been completed, and water had been brought into the town in April, 1591. Water taken from the river by this means had supplied the town for 300 years. The open watercourse, however, was liable to be blocked in times of snow and frost, and for this reason, and also because the increased population demanded a larger and more certain supply, various schemes had been promulgated for the storage of flood-waters and the protection of the leat. In 1891 the author had been appointed Water Engineer, and a few months later he had presented a report, which had been adopted, advocating the building of a storage-reservoir and the substitution of a line of pipes for the open leat. An Act of Parliament had been obtained in 1893 for the construction of the necessary works, which had been commenced in August of that year, Mr. James Mansergh, President Inst.C.E., acting as consulting engineer.

By the new scheme the drainage area had been increased from 4,885 acres to 5,360 acres. Nearly the whole watershed lay on the granite formation, a small portion on the west side being on the Upper Devonian. The rainfall was about 58 in. or 60 in. annually, and an interesting feature of this gathering ground was the unusually high dry-weather flow from it. The Burrator reservoir was formed by two dams, one of masonry across the narrow gorge through which the river Meavy flowed, the other of earthwork lying between two hills, Sheepstor and Burrator. The greatest depth of water was 77 ft., and the area covered by water was 117 acres, the quantity of water impounded being 657,000,000 gallons. The masonry dam (called the Burrator dam) was built of large rough blocks of granite in cement in the interior, and faced with irregularly coursed granite on both sides. From the bottom of the foundation to the coping of parapet wall the height was 145 ft. 6 in. A roadway, 18 ft. wide, was carried over this dam on five segmental arches of 25 ft. span. The earthen dam was remarkable for the fact that its construction had involved the cutting of a very deep trench for the foundations, although the dam had to withstand but a small head of water. The trench had been cut through decomposed granite to a depth of 105 ft. in the centre, although the depth of water against the dam was only 17 ft. This trench was interesting on account of the peculiar geological features met with. The watertight core of the dam was of concrete (5 ft. in thickness) up to within a few feet of ground level, and of clay from that point upwards.

Water was drawn from the reservoir through two pipes, 36 in. and 25 in. in diameter respectively, laid in a 10-ft. culvert built in the masonry dam. There was no valve-tower. There was a specially designed valve to close the mouth of each outlet-pipe, worked by gun-metal rods and chains from a chamber at the top of the dam, in addition to sluice-valves in duplicate in a valve-chamber on the lower side of the dam. The water drawn for consumption was passed through screen-chambers before entering the pipe leading to the service-reservoirs. The flood-water running to waste was measured over a weir 50 ft. wide, the height of the water over the weir being recorded on a drum turned by clockwork. The compensation water was measured by an orifice gauge placed immediately below the weir. The water supplied to the town was measured over a gauge-weir 12 ft. wide, after which it passed through a 25-in. Venturi meter, which automatically recorded the flow on a diagram.

The pipe-line, which had been laid in lieu of the old leat, was 4½ miles long. The pipes were 25 in. in diameter, and were capable of delivering between 8 million and 11 million gallons per day. The pipe-line had been com-

pleted in May, 1894, and the reservoir and other works in June, 1899, at a total cost of 178,000*l.*

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE. — A general meeting of this Institute was held on the 3rd inst., Judge Baylis, K.C., in the chair. Mr. O. M. Dalton read a paper on the "*Fondi d'Oro*, or Gilded Glasses of the Catacombs." He gave a brief summary of the present state of our knowledge on the subject, classifying existing specimens according to their subjects and presumable dates. It was probable that these glasses first became common in the third century, and that they continued to be made until an advanced period of the fifth, or even later. The process by which they were produced had an important influence in suggesting the use of glass mosaic, the cubes of which were made in a similar manner with a protecting layer or film of glass over their surfaces. The idea of glass vessels ornamented with etched designs in gold leaf between two layers, probably originated in Egypt, but at what date was not certain. An allusion of Athenæus to *ὑάλινα διάχρυσα* belonging to Ptolemy Philadelphus seemed to refer to something of the kind, but the first certain evidence was supplied by specimens dating from about the beginning of the Roman Empire found in Egypt, Cyprus, and Canosa (Canusium). The process was said to have been continued in the Eastern Empire, and in the West was alluded to by the early mediæval writers Heraclius and Theophilus. Panels for caskets and triptychs of the same workmanship were executed by Cennius Cennini of Padua at the close of the fourteenth century. After the revival of interest in the Catacombs in the sixteenth century, various efforts were made to reproduce the ancient processes, and these continued with varying degrees of success down to our own time when Salviati had produced examples in something approaching the old style. By the kind permission of the director of the Victoria and Albert Museum several pieces of Italian work of the fourteenth century were shown, and a fine modern Venetian reproduction was kindly lent for exhibition by Mr. C. H. Read, F.S.A.—Mr. W. H. St. John Hope read a paper on the Gilbertine Priory of Watton, in the East Riding of Yorkshire, exhibiting a coloured and dated plan of all the remains of buildings as yet found on the site. The Gilbertine Order is one of special interest for two reasons: that it was the only monastic order of English origin, and that its houses were normally dual, having both nuns and canons. In some of the twenty-six houses of the order, the dual principle seems to have lapsed; but at any rate it remained in force in nine houses at the suppression. Watton was one of these, and the largest of the order. The site of the Priory is free from buildings, and the excavations have, therefore, resulted in the discovery of almost the entire plan of the house, with the exception of the infirmaries, of which nothing is as yet known. The nuns were the more important element in the Gilbertine house, and accordingly the buildings devoted to their use at Watton are the more extensive. They consist of the church, cloister, parlour, chapter-house, warming-house with dorter over, frater, kitchen, and a western range, including a guest-house. The church was a building 206 ft. long, with presbytery, central tower, north transept, with chapels and nave for the use of the nuns, and a large south aisle with south transept and chapels cut off from the rest of the church by a solid wall, which belonged to the canons. In the dividing wall was a turn through which the nuns might receive the communion and the pax, so arranged that a view of either portion of the church from the other was impossible. The canons' buildings are to the east of the nuns' court, and are joined to it by a long corridor in which was probably the window-house, where the nuns communicated with the officers who managed the affairs of the house. This second group of buildings consists of a cloister with the usual offices, and a church on the south side. Remains of a very fine fourteenth-century lavatory exists in the north walk of the cloister. The fifteenth-century prior's house, west of the church, remains for the most part complete, and is still inhabited. The buildings date from 1170—the larger church being of this date, with fragments of a somewhat earlier building destroyed in the fire of 1167—down to 1500, the canons' buildings being chiefly of about 1320, and the nuns' eastern and northern range of the thirteenth century. Chalk was largely used in the construction, and consequently the ruins have been much destroyed by lime-burners. There are many traces about the site of the moats and earthworks prescribed by the Gilbertine statutes for the better seclusion of the members of the house.—Miss Rose Graham contributed some remarks on the history of Watton Priory from documentary evidence collected by herself. In 1330 the house was heavily in debt, the prior owing 100*l.* to the Archbishop of York. This debt was probably for the building of the canons' cloister. *Conversi* seemed to have ceased at an early date, all outside work being done by paid servants at the end of the thirteenth century. The house suffered considerably in the early fourteenth century from robberies, partly by the de Moleys, who seem to have had a quarrel with the prior, and partly through the royal purveyors of Edward II. on his expedition to Scotland. But in spite of this the general state was prosperous, and in 1326 no less than fifty-three nuns took the veil. The statute as to the kitchen, providing that all should be served from one kitchen only, was certainly evaded in the fourteenth century, if not earlier, despite Papal bulls to the contrary effect. In the very last years of its existence the Priory was drawn, much against its will, into assisting the rebels of the Pilgrimage of Grace, through the efforts of Holgate, who held the house *in commendam*, and seems to have stolen and squandered their resources shamelessly. Mr. Emanuel Green also took part in the discussion.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—An ordinary meeting of this Association was held on the 3rd inst., Dr. Winstone in the chair. Mrs. Collier exhibited an ancient religious picture of Byzantine art, painted on panel and enclosed in an ornamental silver frame about 6 in. square, with a curious filling of silver embroidery concealing the picture excepting the heads and hands of the figures. It was an "icon," and was brought from Moscow. She also exhibited a small "shrine" of bronze, inlaid with mother-of-pearl, presenting the singular feature of one foot of the Crucified being much larger than the other foot. This also came from Moscow. Mr. Patrick, Hon. Secretary, read a lengthy paper by Miss Russell upon "The Structure and Probable History of Some Rude Stone Forts in Scotland," the forts more particularly dealt with being those of Craig Phadriæ, near Inverness, and Castle Finlay, between Inverness and Nairn. Craig Phadriæ is a fort of loose stones bearing no visible traces of vitrification, although it is probable that a real vitrified wall exists beneath the stones, forming a backbone, or core, to keep the larger rampart of loose stones in place. Castle Finlay is a much smaller fort standing on a bridle-path through the woods, which is locally said to be the old road to Perth. It is quite small, with, in proportion, a large, loose stone rampart all round, in which the natives seem to find burnt stones. There is strong probability that Craig Phadriæ is really the castle on Loch Nees where St. Columba visited the king of the Picts.

BOOKS RECEIVED.

TRANSACTIONS OF THE EAST RIDING ANTIQUARIAN SOCIETY for the year ending September, 1900. Vol. viii. (A. Brown & Sons, Limited, The Savile Press, Hull.)

LONDON COUNTY COUNCIL SURVEY OF MEMORIALS OF GREATER LONDON.—BROMLEY-BY-BOW. VOLUME I. OF THE REGISTER OF THE COMMITTEE FOR THE SURVEY. (P. S. King & Son.)

BAPTIST ASSOCIATION CHURCH AND SCHOOLS, MUSWELL HILL.—The seating accommodation of this church is about 900 persons. The ceiling is vaulted in woodwork. A bold tower terminated with a spirelet forms a prominent feature in front; the buildings are faced with red brick, with Bath stone and Costessey dressings, and the style is Late Decorated Gothic. Messrs. Mattock Brothers' (Wood Green, N.) tender of 6,408*l.* 16s. has been accepted for the work; the architect's estimate was 6,780*l.* The design for the building was selected in a recent competition limited to six architects, the alternative designs by the same authors, "Greek Cross" and "Twentieth Century," being placed respectively first and second. The architects of the selected design, "Greek Cross," are Messrs. George Baines and Reginald Baines, of London.

Correspondence.

To the Editor of THE BUILDER.

THE PRESENT CONDITION OF THE BUILDING INDUSTRY.

SIR,—With reference to the prolonged discussion at the Surveyors' Institution on this subject, a few words of extenuation for the much maligned workman may yet be permitted. That the standard of efficiency of the artisan has degenerated is, unfortunately, true, and while, as one speaker suggested, the reduction of manual labour resulting from the use of machinery might have been expected to result in increased mental efficiency and knowledge, this is the very cause of a general deficiency arising from the human tendency to make no greater effort than that called forth by the necessities of the time. While there are individual exceptions, I think this applies very generally to the whole *genus* man. Suppose it were possible to introduce a machine which, by the manipulation of certain stops and the turning of a handle, designs for a building for any particular purpose and in any desired style could be reeled out. Is it likely that the efficiency of the architectural profession would be maintained? Again, if such designs could be placed in another machine, and a mathematically accurate bill of quantities could be produced on revolving the handle, I venture to think that "taking off" would soon become a lost art. There might be a few architects whose love of art, exceeding their love of money, prompted them to adhere to the present method of producing designs, but my opinion, whatever it is worth, is that few surveyors' offices would be without a machine as soon as their efficiency was proved (or possibly architects would invest in "quantity machines" as well, and have other quantities "ground out" by the young lady who operates the typewriter). In any case your architects and surveyors would become mere operators of machines and "piecers together" of the productions of the machines.

And this is exactly what has happened in the building trade; the work which the old time joiner did on the bench by manual labour is now prepared for him by machinery, and he is nothing more than a putter together and fixer. And this applies in a less degree to all trades. The artificer has no opportunity of acquiring the skill possessed by former generations, and if he did acquire it, he would have little opportunity of exercising it. That this relaxation of manual labour has *not* produced a corresponding advance in technical knowledge arises mainly through the conditions brought about by the levelling-down process of trades-unionism, by which there is absence of proper encouragement to a workman to excel above his fellows.

The only remedy for this appears to me to be the establishment of grades. I do not suggest how it is to be done—that requires lengthy consideration; but so long as the veriest muddler and spoiler of material can go and *get*—I will not say earn—as much as the best skilled mechanic, there is little incentive to advance.

The great question of time, or want of it, generally bears very hardly upon the surveyor, who is accustomed to receive a roll of drawings, with an urgent request for dispatch from the architect, "as I promised the tenders should be in *last week*." This cannot always be avoided, but the surveyor has a real grievance when an architect supplies him with -in. drawings for a new building with a specification of a former job to follow, and then, when the work is all taken off, sends him a set of details and new specification entirely in contravention of the old specification, necessitating a revision of the entire dimensions and descriptions.

HARRY G. ASSITER.

KRAUSS *v.* MAYOR AND CORPORATION OF BRISTOL.

SIR,—My attention has been called to your report of the proceedings in the Court of Appeal upon the Corporation of Bristol applying to stay an action which I had commenced against them for damages caused by their delay of works comprised in my contract with them for the erection of additions to the Bristol Lunatic Asylum.

Your report may create an impression that I had entered into a contract without any provision for an independent arbitration, but this is not the fact. On the contrary, the contract contained a clause entitling me to demand a hearing before an independent arbitrator in the event of my being dissatisfied with the decision or certificate of the architect upon questions relating to the quality of the materials supplied, or the character of the work done by me, or the price to be paid for any extra work.

The claim made in my action against the Corporation related to matters not contemplated by either party—that is, the damages caused by the delays of the Corporation; and I certainly did not expect that this would be regarded as a matter within the jurisdiction of the architect.

A. KRAUSS.

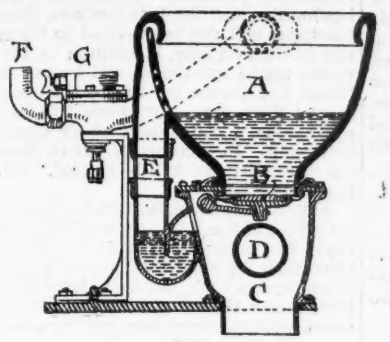


Fig. 1.

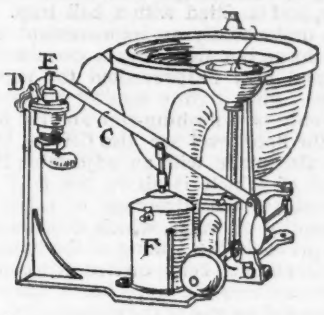


Fig. 2.

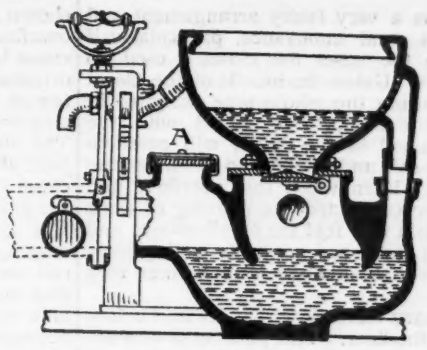


Fig. 3.

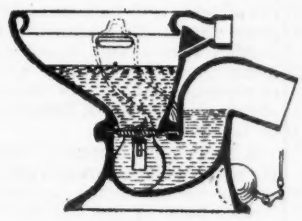


Fig. 4.

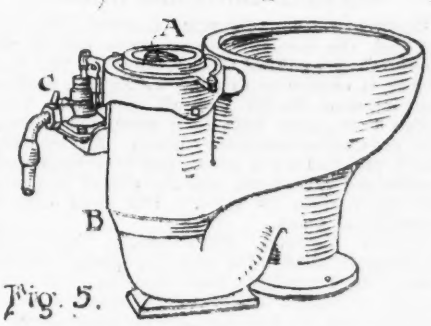


Fig. 5.

Illustrations to Student's Column.

THE LATE MR. F. BOREHAM.

SIR,—In reference to the obituary notice of my father, the late Mr. F. Boreham, architect, which appeared in the *Builder* of March 30 last, seeing that mention was there made in detail as to some of his minor works, I think it is only just to his memory, therefore, to record some of the more important buildings erected by him during his thirty years' practice.

Perhaps he was best known as the architect of many Nonconformist churches in London and the provinces; but other works included the Aged Pilgrims' Asylum, Hornsey Rise, and Old Park, Dover, and, more recently, Temple House, Temple-avenue, the publishing offices of Messrs. Horace Marshall & Son. He was also responsible for several warehouses and business premises in the City, as well as various private residences.

On the list of successful competitions (out of the total entries two-thirds of his designs were premiated) may be mentioned the University College of Wales, Aberystwyth, and the Whitefield Tabernacle, London.

H. YOLLAND BOREHAM.

The Student's Column.

SANITARY FITTINGS AND PLUMBING.

13.—WATER-CLOSETS.

MECHANICAL CLOSETS.—For many years after the introduction of water-closets the appliances were of such an insanitary character, and the drains into which they discharged were so badly constructed and ventilated, that they deservedly received a bad name. They were undoubtedly the cause of a vast amount of sickness and a great number of deaths. The one point in their favour was their convenience, and this was so great that in spite of the danger the public insisted on having them. Sanitarians bowed to the public demand and turned their attention to devising improvements in the apparatus and in the soil-pipes and drains connected therewith. Their efforts have been so successful that to-day the principal objection against water-closets is not that they are dangerous to health, but that they involve an enormous loss of valuable manure. Notwithstanding the jeremiad of Sir William Crookes, the public will probably go on running the all-important nitrogen to waste.

It was in 1778 that Joseph Bramah patented his water-closet. This was of the valve type, but as it has long been discarded, no description of it need be given. It was followed by the "pan-closet," which, notwithstanding its terrible defects, has continued in use to our own day. Fortunately it is prohibited by many sanitary authorities, but large numbers are still in existence, and some makers of so-called "sanitary" fittings still continue to supply parts for repairing the apparatus, even if they do not manufacture complete closets. The pan-closet has three principal parts—(1) the basin, which is usually of porcelain and of hopper form, sometimes with a flushing rim and sometimes with nothing but a fan-spreader for the inlet of the water; (2) the pan, which is a pan-shaped vessel (usually of copper), hinged at one point of the rim, and attached to a lever in such a manner that, when the handle of the lever is raised, the pan swings downwards and discharges its contents into the closed container below, and when the handle is released, the pan returns to its horizontal position, surrounding the lower part of the basin, and receives and retains the last portion of the flushing water; and (3) the container, which is a cast-iron chamber, large enough to admit of the free movement of the pan; as a rule, a lead D-trap was fixed under the container. Not a single important part of the apparatus is without one or more serious defects. The basin is of bad shape, easily fouled, insufficiently flushed, and with too small an area of standing water. The pan is quickly corroded, and therefore ceases to hold water. The container exposes a large area to the action of the "soil," and is soon coated with filth, as it cannot possibly be cleaned by the small amount of water used in flushing. And the D-trap also retains filth, and is in consequence more easily corroded, particularly in the parts of the trap above the water-level. To complete the black list, the flushing water is generally supplied through a very small pipe brought directly from the cistern used for storing drinking water. This description, which, by the way, is not half black enough, ought to have been entirely unnecessary in the twentieth century, but as long as manufacturers and merchants continue to advertise the dangerous apparatus, so long must warning words be uttered. It would be a blessing if every pan-closet now in existence were at once declared a nuisance and removed. No one could reasonably complain that adequate warning had not been given, for as long ago as 1852 the apparatus was condemned by the now-defunct "General Board of Health" of this country.

Bramah's valve-closet was followed by many others on similar lines. The improvements which were gradually made included the better flushing of the basin, the improvement of the valve so as to fit closely against the seating, the reduction of the size of the valve-box and the improvement of its shape, the introduction of a self-cleansing trap under the valve-box, the trapping of the overflow, and the ventilation of the valve-box. Fig. 1 shows such a closet, with the trap and part of the mechanism omitted. A is the basin of white-ware with flushing-rim, B the valve, C the lead valve-box with brass cover, D the ventilating socket of the valve-box, E the overflow from the basin trapped before its connexion with the valve-box, and so designed that it receives a certain amount of water every time the closet is flushed, and thus the trap is kept charged, F the supply-pipe, and G the supply-valve with regulating thumb-screw. The valve-box is sometimes made of cast-iron enamelled inside, and occasionally of pottery. The ventilation of the valve-box is an important point, as it prevents the siphonage of the overflow-trap and affords an escape for foul gases generated in the closet-trap and valve-box. The ventilation-pipe may be carried through the external wall, and finished with crossed wires. In some closets the trap of the overflow discharges into the ventilation-pipe, and not directly into the valve-box. The object is to prevent the lower portion of the overflow-pipe or trap being blocked with paper or soil. More commonly, however, the valve is placed so as to cover the end of the overflow when the valve is open; this is the arrangement shown in fig 2. The overflow-arm shown in the illustration is not of the best design, as it cannot possibly be cleaned.

It will be observed that the basin retains a large quantity of water, and an arrangement must be adopted whereby this quantity will be supplied automatically after the handle of the flushing apparatus has been released. One of the best-known devices for this purpose is the bellows-regulator shown in fig 2. When the handle A of the flushing apparatus is raised it lifts the lever B, which actuates the valve of the closet, and also raises the lever C, which is pivoted at D and attached to the supply-valve at E. The lever C raises the spindle of the supply-valve and admits water to the basin, and at the same time raises the spindle and valve of the regulator F, and forces air from the bellows into the outer compartment, from which the air can only escape through the small cock. When the handle of the closet is released the valve-lever B at once drops back into position and closes the closet-valve. The lever C, however, can only descend as the air is expelled through the cock of the regulator; consequently the supply-valve E does not close for some seconds after the handle has been released. The quantity of the after-flush can be regulated by adjusting the air-cock on the bellows-regulator. The device shown at G in fig. 1 is another arrangement for regulating the after-flush.

The supply pipe and valve are usually only 1 in. in diameter, but this is often too small to give an adequate flush and after-flush. Where the cistern is less than 10 ft. above the closet the valve should be 1¼ in.; where it is less than 6 ft. the valve should be 1½ in.

Some plumbers do not connect the overflow-arm and the valve-box, but permit the overflow to discharge on to a lead safe under the closet, from which it escapes by a pipe to the open

air. This is a very faulty arrangement and often causes great annoyance, particularly if (as is often the case) the closet is used to receive slops. Unless the handle of the closet is held up during the whole time occupied in emptying the slops, these, mixed with the water contained in the basin, will overflow and foul the safe and give rise to unwholesome emanations. Even when the overflow and valve-box are connected the pouring of slops into the basin will foul the overflow-arm and trap, and as these are generally inadequately flushed, the surfaces will in time become very nasty.

The ordinary valve-closet has its trap below the level of the floor. This position is very unsatisfactory, as it renders inspection and repair of the trap more difficult. It is a better plan to raise the whole closet on a step, so that the trap is above the main floor. When (as is generally the case) the closet is enclosed with woodwork the step is not objectionable. Some sanitary authorities wisely insist on the joints at the outlets of closets being above the floor level, and the ordinary valve closet is rejected as it does not comply with this regulation. Special valve closets are made to meet the difficulty, an example being given in fig. 3. In this the valve-box, closet-trap, and overflow-trap are formed in one piece of stoneware. An inspection-opening, fitted with a ground cap, is formed in the top of the trap at A, and a ventilating socket is formed on one side of the valve-box. The closet cannot be recommended; the trap is of such a shape that deposits are almost certain to occur in it, and there are other defects which need not be particularised.

Valve-closets are also made in "pedestal" form—that is to say, for standing without wood enclosures; but some of these are far from pleasing in appearance. One of the best examples is given in fig. 4. In this the valve swings in the trap of the closet, the separate valve-box being entirely omitted. The valve is operated by a lever and two bevelled cog-wheels, and when open, fits into a recess at the side of the trap, so as not to interfere with the flow of the water. The overflow arm has a large opening at the top for the insertion of a brush, and is arranged to receive a small portion of every flush. The outlet of the trap is well above the floor. This closet is practically a wash-down closet with a valve inserted to raise the level of the standing water in the basin.

The great advantage claimed for valve-closets is that they retain a large quantity of water in the basin. This gives a large surface for the reception of the soil, and consequently prevents the fouling of the basin and other objectionable results; it also ensures a thorough removal of the contents of the basin when the valve is opened. The disadvantages are that the closets are complicated, the mechanism is apt to get out of order, and the valve does not always fit tightly on its seat. Notwithstanding the high praise which the valve-closet has received, it is gradually being discarded. The invention of good forms of wash-down closet did much to lessen its popularity, and the siphonic closet, which gives an equal water-area in the basin, seems destined to complete the process. Some of the most noted manufacturers of sanitary fittings do not even trouble to show a single valve-closet in their catalogues, while others devote the smallest possible space to the subject.

The "Trapless" valve-closet was an attempt to simplify the mechanism of the ordinary type of valve-closet. The hinged valve was replaced by a plug attached directly to the handle by a vertical spindle, and working in a small compartment communicating with the basin by means of a large opening. When the plug was raised, the contents of the basin escaped through the opening under the plug to the soil-pipe below. The supply apparatus was regulated by a ball-cock or float in the plug chamber. The objections to this closet are that the plug is certain to be fouled by the soil, and that foul air is forced into the room whenever the plug is raised. The small ventilation-pipe sometimes inserted below the plug seating is of very little use as a preventative of the latter defect. The insertion of a trap below the plug seating is the obvious remedy, and this has been done in Jennings's improved plug-closet shown in fig. 5. The basin and trap are made in one piece of glazed earthenware; the plug is connected by a vertical spindle to the handle A, and fits on a seating at the tapered part B; the regulating supply-valve is shown at C. The plug is hollow and forms the overflow, and is fitted with a ball trap. This closet is undoubtedly an improvement on the original form, but the plug is certain to get fouled, and may be prevented (by paper or soil) from fitting tightly against the seating. The absence of a flushing-rim, and the flange-joint at the floor level are also defects, but the closet is also made with an adjustable P-trap, the outlet of which is above the floor level. The closet has the advantage of retaining a large quantity of water, which deodorises the soil and prevents the fouling of the basin, and also ensures the soil being carried with considerable velocity into the trap, but it cannot be recommended for use at the present day.

GENERAL BUILDING NEWS.

CONGREGATIONAL CHURCH, CARDIFF.—On the 3rd inst. the foundation-stones were laid of the Central Congregational Church, Cardiff. The new church is erected from plans by Mr. W. Beddoe Rees, architect, Cardiff. It will be built of Newbridge stone, faced with Bath stone, and relieved with red Cumberland stone pilasters. Accommodation is provided for a lecture hall to seat 750, with vestries and classrooms, and the chapel proper to seat from 1,000 to 1,100. The total cost is estimated at 5,000*l.*

WELSH CHURCH, PENTREBACH, MERTHYR, GLAMORGANSHIRE.—The new St. James's Welsh church at Pentrebach, near Merthyr, was consecrated recently. Mr. Penry Williams was the architect, and Mr. John Griffiths the contractor.

METHODIST CHURCH, CHESHUNT.—A Methodist church in the High-road, Cheshunt, was opened on the 19th ult. Mr. John Wills, of Derby, was the architect.

CONGREGATIONAL CHAPEL, CARDIFF.—A new Congregational chapel has just been opened in Clare-road, Cardiff. The building was erected, at a cost of 1,200*l.*, by Messrs. Lattey & Co. Messrs. James & Morgan were the architects.

INFANT SCHOOL, RUGBY.—The new infant school recently erected at the rear of St. Matthew's school premises in Pennington-street was opened on the 21st ult. The new building, of which Mr. J. T. Franklin was the architect, was erected by Mr. A. Harris. It consists of one large apartment, which, when occasion requires, will be divided into two by means of a folding screen with glass panels. The space on one side of the screen is 24 ft. by 22 ft. 6 in., and on the other 19 ft. by 22 ft. 6 in. The walls are of red bricks, with a dado of glazed bricks in three colours; the floor is of wood blocks, and the ceiling is of pitch pine.

SCHOOLS, DONCASTER. — On the 2nd inst. the Mayor of Doncaster opened the new girls' school in Carr House-road, Hyde Park, built by the Corporation. It was decided to build a new girls' school, giving the boys the existing girls' places. The total accommodation provided at the Corporation schools now is:—Boys, 420; girls, 320; infants, 272; total, 1,012. This new girls' school is so arranged that two additional classrooms, accommodating 120 additional scholars, can be added any time when required. The central hall, cloakrooms, and lavatories are already provided to accommodate 120 extra children, whenever thought necessary. Owing to the site being a sloping one, it has necessitated deep foundations, and practically another story being built, which has been utilised at the back for caretaker's storeroom and separate covered playground for the girls. The school floors are carried on steel girders above the playground below. Access to the central hall from the playground below is obtained by means of a flight of steps. The inside of the schools throughout is similar in character to the schools previously built, and has wood-block floors, glazed brick dados, patent folding pitch-pine divisions, and oak furniture. The Corporation decided to improve the heating arrangements at the old schools, as well as provide for the new, and by the enlargement of the boiler-house and coal-cellar, and the substitution of a much larger boiler and chimney, the caretaker will be able to heat the whole range of school buildings, comprising twenty classrooms, &c., from the one boiler. The roadway has been widened and improved, and a new fence wall with iron palisading has been erected in front of the schools. Over the main entrance a clock-tower has been erected, with a striking clock and four illuminated dials. The work has been carried out from designs and under the superintendence of the Borough Surveyor, Mr. Crabtree.

SCHOOL, CRAIGLOCKHART, EDINBURGH.— The plans of the new school which is about to be erected by the Edinburgh School Board at Craiglockhart have now been prepared. Situated at Ashley-terrace, the school and playgrounds will occupy about an acre and a quarter of ground. The building will accommodate nearly 1,600 children. Two halls on the ground and first floors form a prominent feature of the internal arrangements. That on the ground floor, some 70 ft. by 30 ft. in extent, is designed for the use of the infant department, and the hall on the first floor for the use of other juveniles. On each floor eight classrooms will enter off the halls. Rooms for the headmaster and the lady teachers, cloakrooms, and lavatories will also be provided on the ground floor, and on the first floor, in addition to the eight classrooms above mentioned, will be two smaller classrooms and rooms for the teaching staff. On the second floor nine classrooms will be provided, a gymnasium, a combined cookery classroom, and a workshop. In a corner of one of the playgrounds the janitor's house will be erected. Mr. R. Wilson is architect.

BAPTIST SCHOOLS, HISTON, CAMBS.—The foundation-stone of these schools was laid on Easter Monday. The school is divided off into a number of classrooms by means of swivel partitions, which, when thrown back, make one large hall. Two other large senior classrooms are provided, also infants' room, kitchen, classrooms for boys and girls, and the usual offices. The building has nave and aisles arrangement (the aisles dividing off into classrooms), and has timber columns and arches of quaint design, carrying clearstory. The whole of the internal joinery is to be stained transparent olive green and varnished. The external facing is of red brick with Bath stone dressings, and roofs of green slates. The contract is let to Mr. H. Feast, builder, Haddenham, Cambridge, and amounts to 1,852*l.* (architect's estimate, 1,875*l.*) The architects of the above and also of the church, recently completed, are Messrs. G. Baines & R. Palmer Baines, of London.

A YEAR'S BUILDING IN LIVERPOOL.—The Corporation Building Surveyor (Mr. William Goldstraw) in his annual report states that the number of houses built in the city during 1900 shows a decrease from the number of the previous year, which was abnormal, being 1,573, against 2,358 in 1899. In Wavertree 481 houses were erected during last year, West Derby 373, Toxteth Park 312, Walton 300, Old City 107. During the last five years 9,318 new houses have been erected in the city, the greatest increase being in Wavertree, with 2,331 houses. It is a remarkable fact that in this respect the old city stands second, with 2,218 houses. During 1900 no houses under an annual rental of 12*l.* were erected, and four only in 1899; from 12*l.* to 25*l.* rental 1,038, against 1,590 in 1899; from 25*l.* to 35*l.* rental 402, against 607; from 35*l.* upwards 133, against 157. The total number of buildings of all kinds erected during 1900 was:—New houses, 1,573; workshops, stables, and minor buildings, 116; new public buildings, offices, and manufactories, 47; warehouses, 3. Buildings taken down:—Houses, 899 (of which 584 were demolished by the Housing Committee); workshops, &c., 37; public buildings, &c., 11; warehouses, 5. The buildings of all kinds taken down during 1900 were more in number than in any year since 1896, inclusive.

WORKHOUSE HOSPITAL, HALIFAX.—A building has been erected at Salterhebble by the Halifax Board of Guardians to meet the need for increased hospital accommodation. The hospital stands on a site of about twelve acres, about a mile from Halifax on the Huddersfield-road. Plans have been prepared by the architect, Mr. W. Clement Williams, of Halifax, for a comprehensive scheme which will provide accommodation for 642 patients, in addition to which there are beds for about 100 nurses and servants. The total estimated cost is about 130,000*l.* It has been thought, however, that to meet the immediate requirements the provision of 400 beds for the sick would be sufficient, together with the complete scheme of administration buildings, for by this arrangement it would only be necessary to add an additional pavilion as the need may arise for more beds. The Nurses' Home is the first building seen on entering from the Huddersfield-road, and is placed astride the centre line of the hospital. It contains accommodation for nurses and probationers, including general and separate sitting-rooms, library, dining-room, and lecture-room. There are in this block over seventy bedrooms. Immediately behind the Nurses' Home, the first floors being connected by a three-arched bridge, is the administration block, the ground floor of which is devoted to porters' rooms and storerooms. The first floor is set apart for committee-rooms, doctors', stewards', and matron's offices and sitting-rooms, dispensing and matron's stores, with electric lift from the basement. There are also a large kitchen and a scullery, with larder, &c. On the south side of this floor is an isolated receiving pavilion connected with the main building by a bridge. On the same story of the eastern block are the assistant medical officer's apartments. The chief medical officer will be provided with a separate residence. The other administrative buildings are the electric light and power station, placed below the ground level, the boiler-house and disinfecting station, and the laundry. The buildings already referred to occupy the centre line of the site, which runs from east to west, and the ten pavilions for patients (five for each sex) are placed in two lines, one on the north and one on the south side of this central block. Corridors connect the administrative buildings with the pavilions, all of which are connected by one-story corridors with service subways underneath them. The subways allow of any pavilion being served from the kitchen or store without the hospital corridors being used. Eight of the pavilions are oblong and two stories high, while

the remaining two are circular and three stories in height. Outside the general hospital scheme and entirely isolated are two small pavilions for maternity cases, each containing four beds. The mortuary will also be an isolated building. There are fire-escape staircases for all the wards. The Guardians have had to take over the mason's contract (with Mr. Richard Charnock as manager), and the electric lighting, &c. (under the superintendence of Mr. Savile Watney), while the other principal local contractors are:—Messrs. Hanson & Son, joiners; Messrs. Rushworth & Firth, plasterers; Messrs. Moss Brothers, painters; and Mr. Boocock, plumber. In connexion with the water supply, the water is supplied through Walker's health pipes, supplied by Messrs. E. Walker & Co., of Heckmondwike.

NEW WARDS, BRISTOL EYE HOSPITAL.—On the 26th ult. the new wards and operating theatre of Bristol Eye Hospital were opened. The extension of the hospital has involved an expenditure of about 6,800*l.* The enlargement consists of the addition of another story and the erection of a new wing at the back of the present premises towards the garden. The new story provides sleeping accommodation for the nurses and servants, some small wards for patients, and an operating theatre, and the new wing contains a sitting-room for the nurses and increased ward space. The kitchen has also been enlarged and refitted, and the whole hospital is supplied with electric lighting. The architect was Mr. G. H. Oatley.

EXTENSION OF PRESBYTERIAN CHURCH, RATHGAR, DUBLIN.—Christ Church (Presbyterian), Rathgar, is being extended. The work will consist of the addition of a transept, the extension of the existing transept, the erection of a chancel, with provision for the choir and a new organ, and the enlargement of the lecture-hall with additional classrooms. The work is being carried out by Mr. William Crichton, of Rathgar, Messrs. Musgrave & Co., of Belfast, having supplied the heating and ventilating apparatus. Mr. W. M. Mitchell, of Dublin, is the architect.

JEWISH SYNAGOGUE, GLASGOW.—On the 27th ult. the foundation-stone was laid of the new Jewish synagogue in South Portland-street, Glasgow. Mr. J. Chalmers is the architect.

FLATS, NOTTING HILL.—A block of self-contained residential flats, to be known as Crescent-mansions, has just been erected on the site of No. 122, Elgin-crescent, W., from plans and under the direction of Messrs. Palgrave & Co., architects, Victoria-street, S.W. The style adopted is a modified Queen Anne. The general contractors were Messrs. E. Collins & Co.

BUILDING NOTES, ABERDEEN. — The District Lunacy Board has accepted the tender of Messrs. Hendry & Keith, Aberdeen, for the joiner work of the new asylum at Kingseat, Newmachar, Mr. A. M. Mackenzie, A.R.S.A., architect. The contract price is 116,526*l.*—The Committee of Aberdeen City Parish Council have agreed to provide accommodation for 660 inmates in the proposed new poorhouse at Oldmill, Messrs. Brown & Watt, Aberdeen, architects.—The various bodies concerned have approved of the plans (by Mr. A. Marshall Mackenzie) of new Greyfriars Church, corner of Queen-street and Broad-street, estimated to cost 10,000*l.* The entrance will be at the west end from Broad-street, where will be a tower 32 ft. square, rising to a height of 100 ft., and with steeple to 150 ft. The Queen-street elevation shows a series of seven three-light windows, and above them another series in the nave. The church will consist of a spacious nave with central passage along the entire length, and an apse at the end in which will be placed the stained-glass window from the old pre-Reformation church, a building which is to be removed in connexion with Marischal College extension. On the north side of the apse is the vestry. The organ chamber is opposite, and beside it the choir will be accommodated. To the south will be a side aisle separated from the nave by three stone arches supported on pillars. The height in the nave from floor to ceiling is 40 ft., and the arches of the aisle are 20 ft. high. At the west end will be a small gallery over the vestry. The whole will provide for 800 worshippers. In basement floor will be a hall seated for 300, session-house, guild-room, and heating chamber.—Aberdeen Town Council have accepted the tender of Mr. Leslie Smith, Aberdeen, for the mason work of the new Corporation Electric Station at Ferryhill amounting to 7,555*l.*, and also that of Green's Economiser Company, Limited, for an economiser, 1,293*l.* The architects are the Corporation's Electrical Engineer and the Corporation's Gas Manager.—The Secretary for Scotland has consented to a further loan of 81,000*l.* for the electrical department, making the total borrowing power under the Electric Lighting Order, 1890, 185,000*l.*

CO-OPERATIVE PREMISES, BIRKENHEAD.—A new building in Catherine-street, Birkenhead, for the local co-operative society was opened on the 30th ult. The architect was Councillor Snape.

HOSPITAL EXTENSION, BRISTOL.—A meeting of the Bristol Health Committee was held on the 2nd inst., when the City Engineer presented plans and drawings for extensions at Ham Green. The erection of a new pavilion, the floors with provision for twenty-four patients on the ground floor and twenty-eight patients on the first floor, with the necessary offices was estimated at 13,300*l.* The design was generally in accord with the pavilions already constructed, except that it would be longer and considerably higher. It was also considered necessary to have increased accommodation in the administration building, and, by the building of an additional wing at the back of the old house, provision was made for thirteen beds for servants on the ground floor and for thirteen nurses on the first floor. The estimated cost of the alterations and extensions was 3,100*l.* Designs for an additional isolation block, larger than the present one, were also presented. The plans showed a pavilion with accommodation for four one-bed wards and three two-bed wards, and the estimated cost was 3,260*l.* For extra cost of providing electric light, water, drainage, roads, fencing, &c., a sum of 1,400*l.* was put down. The design for the water-tower, submitted on the last occasion, was considered of too expensive a character, so he had reduced it to its absolute minimum. It would be simply a tank constructed on cast-iron pillars, and the cost was estimated at 1,750*l.*, with 550*l.* for the cost of obtaining the loan and supervision. The plans and designs were referred to the Hospital Sub-committee to bring up a report on the same.

PROPOSED RECONSTRUCTION OF THE CATTLE MARKET, TRURO.—An inquiry was held at Truro on the 3rd inst. by Mr. W. O. E. Meade King, M.Inst.C.E., on behalf of the Local Government Board, respecting an application by the Corporation for sanction to borrow 5,400*l.* for the entire remodelling of the cattle market. Details of the new market, which, by the addition of a new piece of land, will cover 6,588 square yards, were explained by Mr. Lea, the Surveyor and Engineer.

PROPOSED ISOLATION HOSPITAL FOR LONGTON, STAFFORDSHIRE.—At a recent meeting of the Longton Town Council the Sanitary Committee submitted a report from Mr. Hare, the architect appointed to prepare the plans of the proposed isolation hospital. The report was accompanied by drawings showing the arrangements suggested to meet the possibility of the settlement of the site owing to mining operations. The scheme includes administration and laundry blocks, two ward blocks containing eighteen and fourteen beds respectively, and isolation blocks containing eight beds. The total cost of the buildings as proposed would not exceed 8,000*l.* Mr. Hare had submitted the whole of the proposed construction to the Local Government Board, and had received an unofficial assurance that for the purposes of a loan they would regard the buildings of as permanent a nature as if built of brick. At an interview with the committee Mr. Hare explained that it was intended to construct underneath the whole of the site a concrete bed, with steel joists, at least 18 in. thick, and in his opinion there would then be very little risk of damage by mining subsidence. The committee recommended that the buildings be constructed of bricks and mortar, and that Mr. Hare be directed to proceed with the preparation of the plans and specifications immediately. The report was adopted.

SANITARY AND ENGINEERING NEWS.

WATER SUPPLY, GOOLE.—At the meeting of the Gas and Water Committee of the Goole Urban Council recently, the engineer for the new waterworks at Pollington (Mr. J. C. Melliss) reported that the contractor had constructed the well 80 ft. deep and 10 ft. in diameter, lined with blue bricks in cement, and made the 20-in. borehole to a depth of 130 ft. from the bottom of the well, making a total depth of 210 ft. from the surface of the ground to the bottom of the borehole. He had also carried out the test pumping, and during twelve and a half days of continuous pumping some eight million gallons of water had been lifted from the well and borehole, and throughout there had been no diminution in the quantity which the well and borehole are yielding. Careful records have been kept, which show the yield of the well and borehole to approach nearly 700,000 gallons in the twenty-four hours, being ample for the present requirements of Goole and for a considerable time to come, and also for the supply to such adjacent villages as may require it.

WATER SUPPLY, LOOE, CORNWALL.—At a recent meeting of Looe Urban Council, Messrs. S. W. Jenkin & Son, of Liskeard, the engineers of the proposed water scheme, reported that they believed all the conditions and requirements of riparian and other owners had been at length satisfactorily settled. The surveyor, acting on behalf of Mr. Somers Cocks, had visited the site, and the rights to be conveyed to the Council had been accurately defined to the mutual satisfaction of all interests. The map required by the Liskeard Highway Authority had been prepared, and would be forwarded with the required assurances to them, and the way was now quite clear to invite tenders and enter into contract for the construction of the works. After discussion, it was resolved that the Council themselves purchase the pipes and valves, and the clerk was instructed to obtain tenders from firms approved by the engineers, and that tenders for laying the mains and constructing the reservoir be invited as soon as possible.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. George Wragge, craftsman in metal works, stained glass, &c., has removed his London premises from No. 22, Surrey-street, Strand, to No. 211, Shaftesbury-avenue, Oxford-street, W. —— The Blackman Ventilating Company, Limited, have acquired from Mr. James Keith, C.E., his business as heating engineer (with departments in gas and hydraulic work), carried on at Farringdon-avenue, E.C., and at his foundries and engineering works in Arbroath. The company will be carried on under the new name of James Keith and Blackman Company, Limited.

PUBLIC IMPROVEMENTS, BRIGHTON.—On the 22nd ult. Mr. H. H. Law, M. Inst. C.E., Local Government Board Inspector, held an inquiry at the Town Hall, Brighton, with reference to the application of the Town Council for sanction to the borrowing of sums amounting to 19,600*l.* for purposes of electric lighting, and 8,400*l.* for works of sewerage. Mr. J. Christie, the Electrical Engineer, gave evidence. It was stated that the sewerage works consisted of the construction of a sewer in Lewes-road and the provision of flushing hydrants and sewer ventilators.

PROPOSED NEW STREET, DONCASTER.—On the 22nd ult. Mr. M. K. North, A.M.Inst.C.E., held a Local Government Board inquiry at Doncaster into an application by the Town Council to the Board for the approval of the purchase and exchange of certain land, the sale of consolidated stock, and the appropriation of the proceeds of such sale, or of the sale of Corporate land, towards the cost of the purchase of the aforesaid and of the formation of a new street from the corner of the Corporation Baths in French-gate to the commencement of High Fisher-gate, at its junction with Church-street. It was stated that the Borough Surveyor had made an estimate of the total cost of the work, which was 3,700*l.* The plans were explained by the Borough Surveyor, Mr. W. H. Crabtree.

SLUMP IN THE RED BRICK TRADE.—Building brick makers in the Oldbury, West Bromwich, and Tipton districts are now passing through the severest crisis experienced for many years. Twelve or eighteen months ago prices of common red bricks were raised to an unusual height by the rapid development of house building, not only in the immediate neighbourhood of the works, but also in London, Birmingham, and other large towns. Prices realised about 34s. per 1,000, compared with the normal rate of about 20s. On the strength of the "boom" old brickworks were extended and new works opened, causing the production of builders' bricks to reach enormous proportions. The extra demand for slack for the brickworks was an important factor in raising the price of that article from about 6s. to 10s. per ton. The usual result of over-production has followed in the slump now experienced, as most of the chief brickworks in the districts named have been working short time with no immediate prospect of improvement, while prices have been slowly declining for the last three months. Instead of 34s. per 1,000 the present selling price is, as one firm expressed it, anything between 25s. and 18s., and even a lower price is mentioned where large contracts have to be tendered for. Building operations in all the district towns seem to have been for a time suspended by common consent until the price of slack, and consequently that of bricks, is further reduced. More than half the present price of bricks is said to be absorbed in fuel, leaving little or nothing for labour and establishment charges. The practical result has been that brickmakers have recently incurred the heaviest losses known for thirty years.—*Birmingham Gazette.*

BRIGHTON MASTER BUILDERS.—The annual dinner of the Brighton Master Builders' Association and their friends was held at the Hotel Metropole on the 1st inst. The Chairman (Alderman W. Botting, J.P.) presided, and about sixty sat down to dinner. After the loyal toasts, Mr. G. S. Godfree proposed "The Imperial Forces," and Councillor Buckwell responded. Mr. J. K. Nye gave "The Corporation of Brighton." Councillor Cresswell, in a brief reply, said that although Brighton and Hove were practically one town, it did not follow that it would be better for both to be governed by one authority. The toast of the evening, "The Association of Master Builders," was next introduced by Mr. Gates, who said the Association was brought into existence about ten years ago by a strike. They accomplished the object they had in view, and the Association had prospered ever since. There had been no further trouble of the kind since. A Trade Defence Association was very desirable, especially in their trade. The number of members and subscriptions had been fully maintained, so much so that during the past year the subscriptions had been reduced 50 per cent. A peculiarly gratifying feature of the Association was the Insurance Company which was formed in view of the liability of employers under the Employers' Liability Act. Although only 4s. in the £ had been called up, there was a balance of something like 5,000*l.* to meet any liability, and the interest practically sufficed to pay the working expenses. He coupled with the toast the name of Alderman Botting, to whom the formation and success of

the Association was greatly due. In responding the Chairman said the object of the Association was to prevent strikes, and in that they had been successful. During the past year the only important thing that happened was the reception of a deputation from carpenters and joiners, who wanted more money and the fixing of certain rules, which would place them in a poistion to dictate who should do the work. That the Association would never submit to; these rules had been tried in other parts of the country, and badly they had worked, having had a great deal to do with causing strikes. He was glad to say the finances of the Association were in a healthy condition. The Builders' Association of the country had joined hands in providing a sum of over 21,000*l.* for the building of homes at Bisley for invalid soldiers from the war. That he looked upon as a splendid thing, and he hoped the remaining 9,000*l.* or 10,000*l.* needed to complete the scheme would speedily be obtained. The Insurance Company had been a great success, and by July they would have 5,300*l.* in hand to meet any liability. If they wound it up at once they were in a position to hand to every one who had paid 4s. a sum of 18s. Of course they paid all claims most cheerfully, and had a fund for the protection of their workmen. Other toasts followed.

BUILDING TRADES IN CHICAGO.—In a despatch to the Foreign Office, dated last month, Mr. Wyndham, the British Consul at Chicago, U.S.A., writes that building has been conducted during the past year under the greatest difficulties, and very few undertakings have been brought to a satisfactory ending. It is said that building contracts amounting to nearly 40,000,000*l.* are waiting to be signed as soon as it is certain that they can be carried through without interference. Many of the unions have signed contracts, with an arbitration clause, for three years, and with the cheap rate at which iron can now be purchased a prosperous future for the trades seems probable. Iron is more used in building every year, and enamelled terra-cotta is coming into favour as a substance which will not absorb the smoke and deteriorate. The year was disastrous for the brickmaking industry in Chicago, only 275,000,000 bricks, or 50,000,000 less than in 1899, being sold. Prices have not varied in the last three years, and are from 21s. 10d. to 25s. per 1,000 delivered. A great quantity of cement is used, but it cannot be ascertained that any of this is British. The local and German makers seem to have the trade, and, it is said, sell at much lower prices than the British makers.

PROPOSED PROMENADE, PENMAENMAWR.—On the 29th ult. a Local Government Board inquiry was conducted at Penmaenmawr by Mr. H. P. Boulnois respecting the promenade which it is intended to construct at that place at a cost of 17,000*l.* Mr. Ernest Worrall, Engineer to the Council, explained that treaties had been carried through for the acquisition of the freehold of the existing public beach, about thirteen acres in extent, and for certain facilities and better access across the line of railway. The works would extend nearly a mile along the front, from Dyffryn-road to Messrs. Brundritt's pier at the west end.

ELECTRIC LIGHTING AND DESTRUCTOR SCHEME, CLECKHEATON, YORKSHIRE.—On the 29th ult. Colonel A. G. Durnford, R.E., an inspector to the Local Government Board, held an inquiry at Cleckheaton Town Hall in reference to an application by the District Council for sanction to borrow 25,000*l.* for the purpose of electric lighting and the provision of a refuse destructor. Evidence was given by Mr. C. Lund, Surveyor; Mr. A. H. Gibbings, Electrical Engineer; and Mr. Mortimore, representing Messrs. Meldrum Bros., Manchester, whose system of refuse destruction it is proposed to adopt.

BELFAST BUILDERS' ASSOCIATION.—A special meeting of the members of this Association was held on the 2nd inst. at the secretary's offices, 32, Ann-street, when the following resolution was unanimously adopted: "That the systematic watching, intimidating, and besetting of willing workmen now prevailing is intolerable, and employers are requested to inform the secretary of the Builders' Association of all cases of 'picketing' occurring at their works, so that immediate steps may be taken to prevent their recurrence, and, if necessary, prosecutions instituted under the Conspiracy and Protection of Property Act, 1875."

SCAFFOLDING ACCIDENT AT BIRMINGHAM.—Seven men who were engaged in the erection of a building in Eyre-street, Birmingham, were injured by the fall of the scaffolding on the 8th inst. The scaffolding was fixed upon girders near the roof. Two of the planks forming its basis suddenly snapped and the whole structure fell, carrying with it the seven men to the ground, 30 ft. below. The men were taken to the hospital, and four of them were detained suffering from serious injuries. One of them has since died, and another is not expected to recover.

CAPITAL AND LABOUR.

PENRHYN QUARRIES.—As was anticipated in the district, the mass meeting of the quarrymen only strengthened them in their determination not to resume work until they receive some concessions.

ABERDEEN PLASTERERS' DISPUTE.—Through the good offices of Baillie Taggart and Councillor Milne, a conference of representatives of the Aberdeen master plasterers and the operatives, who have been locked out since February 23, was held on the 2nd inst. in the Grand Hotel with the view, if possible, of arriving at a compromise. It may be recalled that the lockout was the result of the operatives refusing to accept a reduction of wages from 8½d. to 7½d. per hour, given notice of by the masters. Baillie Taggart, in opening the proceedings strongly urged that the dispute should be settled by compromise. He suggested that in order to bring about this both parties might agree to recommend to their respective associations a wage of 8d. per hour. Neither side, however, indicated the slightest inclination to give way, and after some further discussion it was agreed that both parties should separate with the view of discussing the situation. The operatives representatives accordingly retired, accompanied by Baillie Taggart, while Mr. Milne remained with the masters. When the joint conference resumed Baillie Taggart announced that the men's representatives considered 8d. per hour a fair compromise, and he asked the representatives of the employers if they were prepared to recommend such a compromise to the masters' association. After some discussion the masters' representatives expressed their readiness to recommend to their association 8d. per hour as a compromise. Thereafter the following joint minute was drawn up and signed by the Secretaries of both parties:—"The employers and employés present consider wages at the rate of 8d. per hour as a fair and reasonable settlement of the dispute. They also agree to recommend to their respective constituents that this compromise be accepted." This recommendation will come before the employers' and operatives' associations respectively for consideration, but it may also be explained that before any final settlement can be arrived at the recommendation must be approved by the Executive of the operatives' association in Glasgow.

SHEFFIELD PLUMBERS' STRIKE.—The strike of the Sheffield plumbers has ended, and the men, nearly 300 in number, have commenced work again. Since the strike negotiations have been carried on, and, finally, the men signified their willingness to observe all the masters' "new rules of working," which have been one of the main points of contention in the dispute, and they do this notwithstanding that their demand for an increased rate of wages has not yet been conceded. It is one of the conditions of the settlement, however, that the demand for ½d. an hour extra wages shall go to arbitration by the Board of Trade arbitrator. Another condition of the settlement is that the master plumbers shall all take back their former workmen.

THREATENED STRIKE AT GOSPORT.—The bricklayers and labourers of Gosport have notified the master builders of the town that unless the masters grant their demands of a halfpenny per hour increase all round, and a set of rules, they will come out on strike on May 6. The bricklayers at present receive 7½d. per hour and the labourers 5½d.

LEGAL.

DAMAGE TO ROADS BY TRACTION ENGINES.

AT the Thirsk County Court on the 3rd inst. Judge Templar was occupied in hearing an action brought by the Thirsk Rural District Council against Thomas Harrison, contractor, of Stamford-bridge, for the recovery of 136*l.* 10s. damages for injury to the Boroughbridge and Durham main road and to the Ripon and Carlton Miniott Township main road.

The case for the claimants was that the roads had been damaged to the amount named by a traction engine and waggons used by the defendant between June 20 and July 14 last, when he was leading gravel for Lord Leconfield from the Asenby gravel pit. Evidence as to the reasonableness of the sum claimed was given by Robert Wright, Assistant Surveyor for the plaintiffs; W. H. Dixon, Surveyor to the Stokesley Rural District Council; John Scott, Surveyor to the Bedale Council; John Robert Greenshaw, Surveyor to the Pocklington Rural Council; W. Southern, civil engineer, Hull and Beverley; and Peter Jespill, Surveyor to the Hornsea Authority.

The defendant gave rebutting evidence as to the weight of gravel carried in the waggons drawn by his engine, and John Thompson, who drove the engine, deposed that no complaints were made to him at the time, and he made thirty-six journeys in fourteen days. He considered that the engine was improving the roads. Mr. Beverley, on behalf of the defendant, submitted that the claim was an extravagant one.

The Judge gave a verdict for the plaintiffs for the full amount claimed, with costs on the higher scale.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

24,426.—COMBINED LIFTING, WEIGHING, AND INDICATING APPARATUS: *W. Timmermann and H. Dellschafft.*—A weighing contrivance, for attachment to the block of a crane or similar hoisting machine, comprises a spring above which is a plate which carries the suspension-hook. The compression of the spring causes a stud upon the plate, that works within a spiral groove, to turn the stem round, the stem being joined by means of bevel gearing to a shaft upon which the indicating mechanism is carried. The latter mechanism includes a pointer (upon the shaft) which, when it has traversed the dial once, is carried forward that it may register weights heavier than the 200 kilogrammes marked upon the dial. Ratchet gearing provides for the indication upon the dial in kilogrammes and upon a third dial in higher units of the aggregate of a series of weighings.

24,441.—A CONTRIVANCE FOR USE WITH ELECTRICAL ALARM BELLS: *L. Davoine.*—The circuit-closing device comes into operation at the melting of a fusible plug within the push, as the plug becomes heated its surrounding spring forces out a cap on to a spring so as to close the bell circuit. The fusible plugs may be also adapted for telephone circuits.

24,489.—DRAWING AND OTHER PINS: *F. H. Shaw.*—The pins are fashioned in various forms. The chief feature of the invention consists in fitting them with strips or pieces of leather, fabric, or other material, with which they may be readily drawn out of the board. In one shape the ends of a cord or strip are passed through holes in the head of the pin and a clamping disc is fastened on to the under side of the head.

24,504.—A LOWERING APPARATUS FOR FIRE-ESCAPES: *W. Benbow.*—The two cages are caused to ascend and descend alternately as their ropes are wound in opposite directions upon two pulleys mounted on one shaft, which at each of its ends abuts against movable plates held with springs. The springs serve to keep in check the revolutions of the shaft as well as its movement lengthwise, since one end of the shaft is screwed and works within a nut. When either cage is raised to the top it is sustained with spring arms which slide above and then drop over the beam, and can then be freed by hand.

24,511.—A METHOD OF HEATING WATER: *J. Winterflood.*—The appliance, available for domestic and other purposes, combines a water-heater, a thermostatical gas-regulator, and a ball-valve that controls the supply of water. The heater comprises the outer casing and inner casings of a central boiler or chamber. The thermostat is affixed through the outer casing of the heater beneath the boiler, and its valve-rod is worked with levers moved by a lever that is hinged on to the operating-rod, and a float upon the water in an upper vessel regulates the water-supplying valve.

24,534.—A PAINT: *T. Möller.*—For making an air and water-tight paint, an admixture is compounded of milk of chalk (or else English red or ochre), rye meal, iron, vitriol, coal tar (or else wood or Finland tar), lime and water; if red or ochre and wood or Finland tar are used, the lime may be discarded.

24,552.—THE MOULDING OF BRICKS: *A. L. Maynard and J. Watts.*—Curved steel blades force the clay from a hopper through a die into the moulds, the blades being mounted upon a squared part of the shaft with U-shaped bolts which pass around them and through a clamp-plate; the moulds, open at both ends, are carried between guides upon a table or rollers, or else upon jointed bottoms, so as to form an endless chain. As the filled moulds are passed around a pulley they are taken away, and the empty moulds are put upon the bottoms as the latter are passed around another pulley.

24,567.—THE CONTROL OF CONTINUOUS CURRENT MOTORS FOR CRANES, LIFTS, HOISTS, &C.: *J. S. Stevens, C. G. Major, E. C. Stevens, and P. H. Stevens.*—The apparatus combines a multiple-contact switch with means of automatically cutting out resistances at starting and of putting them in at reversing or stopping. As a winding-drum revolves upon a shaft its wave-groove causes to oscillate an arm that is linked to a crank which has a pawl set in engagement with a ratchet-wheel, and the ratchet-wheel is set in frictional engagement with the arm of the switch. As soon as the motor has been started the switch-arm becomes automatically turned until it reaches the lower end of its slide and the starting-resistances are out of circuit, whereupon the ratchet-wheel slips and does not move the switch-arm, one end of another pivotted lever engages with a cam-groove in the stopping and reversing shaft, which, as it turns, moves the switch-arm back to its former place. The specification extends to various modifications of the apparatus.

24,568.—THE MOULDING OF BRICKS: *S. R. S. Batley.*—A hand-lever upon a cross-shaft works the upper pressing-plunger, a crank or cam upon the shaft moves between rollers of the crosshead of the plunger, and at each end of the shaft is a weighted arm that balances the moving parts, one of the arms may constitute an extension of the hand-lever; rods that slide through a crossbar are attached to the lower plunger, the length of their slide being adjusted with nuts in accordance with the desired thickness of the bricks. The main working parts are arranged above the mould in order that they shall not become clogged with grit, &c., from the mould, and the machine—which is mounted upon wheels—is moved and steadied with its weighted side-handles.

24,585.—PAINT, DISTEMPER, AND WHITEWASH BRUSHES: *W. Simpson.*—The inventor makes the brushes with bristles that on the outer side of the brush are longer than the bristles within, and he fills the top space with two segmental pieces of vulcanite or gutta-percha fitted with pegs; the segmental pieces are put into their position after the bristles have been bound with copper wire, the knot is dipped into cement, and then the blade of the handle is forced in.

24,602.—A RETAINING PIECE FOR PIPES: *O. Eggert.*—An appliance for holding or clamping pipes against walls or other brickwork consists of two parts, one of which is fashioned with an extended blade at its one end and the half of a ring at the other end, the portion between them being fashioned with openings and a channel that will take a wedge-shaped key; the corresponding part consists of a half ring and the other half of the portion into which the key is to be forced. When the two parts are wedged together with the key, the completed ring holds the pipe and the blade is secured in the masonry of the wall.

24,612.—THE MANUFACTURE OF TILES, BLOCKS, CONDUITS, PIPES, &C.: *F. C. Sellars.*—Some such binding material as glue water, together with lime, cement, sulphate, or other solution of alumina, protosulphate of iron, &c., are compounded with slag, clinker, or residue from a refuse destructor; when the moulded articles have been dried, they are placed in a solution of silicate of soda, silicate of potash, or other alkali under pressure. The goods may be rendered waterproof by dipping them into an acid, or a solution of alumina or a salt of iron, whilst pipes and conduits may be fired and glazed. For effecting a ready combination of the residue with the silicate solution, some silicious substance such as salt, sand, or spent lime should be mixed with the former material.

24,615.—TILES OR PLATES FOR BUILDING PURPOSES: *F. Pagnon.*—The facing tiles, made of earthenware, cement, glass, or other material are laid with their faces downwards upon a table within a mould, and they are bonded together with a cement, which is poured into the mould, and forms a backing for the tiles. In the cement is embedded wire netting, which is laid so as to project beyond the edges of the tiles; the made-up slabs can be cemented on to the surface of the wall, and they can be separated from one another, or from the wall, by pulling the overlapping edges of the netting.

24,647.—PORTABLE COMMODES: *H. Cowley.*—These are made in the form of a metallic cylinder, at whose upper end is a shoulder, which supports the container and its cover. The ringed groove of a disc, that stands upon the feet, carries the lower portion of the cylinder. At the top of the cylinder are fitted a seat and a hinged cover. The parts described can be easily detached from one another, and be packed in a box or case of suitable shape.

24,651.—A FLUSHING APPARATUS: *F. Woodbury.*—A spring serves to hold the pivotted working-lever in its normal and closed position. A tubular discharge valve is arranged at the base of the closed tank so as to operate within a cylinder, and is joined with a rod that is passed through a pipe and is attached to the end of the working lever above. The flush escapes through ports which are made around the lower edge of the cylinder which surrounds the discharge-valve, whilst the upper edge of the cylinder is made larger that it may take the packing and the compress-ring upon the valve. During the time that the valve is shut the packing remains seated upon the raised edges. The spring underneath the lever acts so as to keep the valve closed; the spring may be disposed in a horizontal position and be caused to bear upon a rod whereof one end is pivotted on to the inner end of the lever.

24,687.—A FLUSHING APPARATUS: *F. Woodbury.*—The filling of the closed tank from the supply-pipe (which is always open) causes air to escape until the water has attained a certain height and then a valve traps the air, the leakage from the valve and air being conveyed through a tube to the flushing-pipe. Within a cylinder that is closed at its top and has ports around its lower edge is a tubular discharge-valve, which starts the flush when raised by a crank-lever movement.

24,753.—A HOLDER FOR WINDOW-SASHES: *A. Forin.*—A wedge-shapened pawl, which is carried upon a bearing in a casing placed within a recess of the jamb, is to be turned with a handle-rod; on the sash is a rack whereof the notches are engaged by a spring that presses against the pawl. Of the two pawls for each sash, the lower one can be turned down for securing the lower sash.

24,788.—WATER SUPPLY (DOMESTIC): *F. E. Kitching.*—The pull-chain is secured to the end of a crank upon the axle which carries a tipping-vessel placed within the tank; in order that the float-lever may have play and that it may be sustained in the lifted position whilst the tipping-vessel is tilted, the axle is also cranked for a portion of its length between the sides of the vessel, which can be made to tilt automatically and be adapted for use with urinals.

24,812.—BRICKS, BLOCKS, SETTS, &C., FOR PAVING AND SIMILAR PURPOSES: *E. Reese.*—The articles are intended to be used as paving-stones and conduits, for channelling, and so on. They are made of granite, slate, or stone quarry refuse compounded with pitch, tar, bitumen, alum, and sulphur, and are moulded under pressure.

24,824.—INCANDESCENT LAMPS: *C. Howard.*—The inventor provides that the long neck of the bulb may be divided and be fused together again when a new filament has been cemented to the leading-in wires; little cups of metal fit into two opposite recesses in the neck, and small holes in a cap upon the shoulder register with the cups, so that the melted solder shall pass through the holes and fill the cups; the device is intended to make the cap movable and to render the use of cement unnecessary for fastening the cap.

MEETINGS.

FRIDAY, APRIL 12.

Institution of Junior Engineers (Westminster Palace Hotel).—Paper on "Iron-lined Tunnelling Construction," by Mr. A. Woodroffe Manton. 8 p.m.

Glasgow Architectural Craftsmen's Society.—Mr. J. K. Edwards on "Warm-air Heating Apparatus and the Building Preparations Necessitated." 8 p.m.

SATURDAY, APRIL 13.

Institution of Junior Engineers.—Visit to Great Northern and City Railway Works to inspect plant. 3.30 p.m.

British Institute of Certified Carpenters.—Mr. G. Ellis on "How is the Future Workman to be Trained." 6 p.m.

MONDAY, APRIL 15.

Royal Institute of British Architects.—Special general meeting (business) (1) to receive and consider a recommendation of the Council that Mr. Wm. Emerson, President, be requested to allow himself to be nominated as President for the ensuing year of office; and that, consequently, By-law 26 be suspended; (2) to sanction alterations in the Institute form of contract. 8 p.m.

Surveyors' Institution.—Mr. Walter C. Ryde on "The Rating of Public Houses." 8 p.m.

Liverpool Architectural Society.—Mr. A. S. Flower, M.A., on "Old English Architecture: A Retrospect and a Suggestion." Illustrated by limelight views. 6 p.m.

TUESDAY, APRIL 16.

Institution of Civil Engineers.—Mr. H. E. Jones on "Modern Practice in the Manufacture and Distribution of Gas." 8 p.m.

Builders' Clerks' Benevolent Institution.—Twenty-third annual dinner, King's Hall, Holborn Restaurant. 6.30 p.m.

WEDNESDAY, APRIL 17.

British Archæological Association.—(1) Mr. C. E. Keyser, M.A., F.S.A., on "Sculptured Tympana of English Norman Doorways," with limelight illustrations. (2) "Notes on interments at Bleasdale, North Lancashire," by Mr. T. Cann Hughes, M.A., F.S.A. 8 p.m.

Sanitary Institute.—Messrs. Henry R. Kenwood, M.B., and W. Butler, M.B., on "Sewage Purification and Standards of Purity." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Quarterly meeting of the members. 8 p.m.

Edinburgh Architectural Association.—Sir John Sibbald on "Lunatic Asylum Design from a Medical Point of View,' illustrated by lime-light views. 8 p.m.

THURSDAY, APRIL 18.

Royal Institution.—Mr. Roger Fry on "Naturalism in Italian Painting." I. 3 p.m.

Institution of Electrical Engineers (at the Institution of Civil Engineers).—(1) Replies of Mr. H. Ravenshaw and Mr. S. F. Walker to the discussion on their papers read at the last meeting. (2) "Test Room Methods of Alternate Current Measurements," by Mr. A. Campbell. (3) "Note on the Use of the Differential Galvonometer," by Mr. C. W. S. Crawley. (4) Announcement of the Council's nominations for the Council 1901-2. 8 p.m.

FRIDAY, APRIL 19.

Architectural Association.—Mr. M. A. Green on "The Eighteenth Century Architecture of Bath" (illustrated by lantern views). 7.30 p.m.

Institution of Mechanical Engineers.—Ordinary General Meeting. Presidential Address by Mr. William H. Maw. 8 p.m.

Royal Institution.—Professor J. J. Thomson, M.A., on "The Existence of Bodies Smaller than Atoms." 9 p.m.

Institution of Civil Engineers.—Students' meeting. Mr. E. V. Clark, B.Sc., on "The Theory of Cast-Iron Beams." 8 p.m.

SATURDAY, APRIL 20.

Architectural Association.—Visit to the International Building Trades Exhibition, Agricultural Hall. 3 p.m.

Edinburgh Architectural Association..—Visit to Duddington House and Church and Chapter House at Restalrig.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 26, 27, and 28.—DRIVERS, JONAS, & CO. (at Monmouth).

Monmouth.—Old Hereford-rd., &c., three freehold cottages and 1 a. 2 r. 24 p.	£200
Llanrothel-rd., an enclosure, 2 a. 3 r. 37 p., f.	130
Old Dixton-rd., five enclosures, 19 a. 0 r. 24 p., f.	1,565
Osbaston-rd., an enclosure, 1 a. 0 r. 26 p., f.	200
Monmouth Electric Lighting Works, f.g.r. 80*l.*, reversion in 95 yrs.	2,100
Rockfield-rd., four enclosures, 12 a. 3 r. 36 p., f.	790
Drybridge-st., Barber's Meadow, 4 a. 2 r. 7 p., f.	725
Dixton Hadnock, Mon.—Wyesham House and 3 a. 0 r. 33 p., f.	1,050
A freehold cottage and 1 a. 2 r. 10 p.	165
Freehold building site, 2 a. 1 r. 27 p.	360
Hill House and 116 a. 2 r. 5 p., f.	5,100
Dixton Farm, 18 a. 0 r. 26 p., f.	1,800
Seven building plots, 2 a. 3 r. 9 p., f.	437
Monmouth Gas and Water Works, f.g.r. 27*l.*, reversion in 27 yrs.	2,100
Monmouth Sawmills, area 4 a. 1 r. 6 p., f.	1,750
Freehold building land, 1 a. 1 r. 26 p., f.	£260
Butterby's Cottage and 3 a. 0 r. 9 p., f.	400
Four enclosures, 25 a. 1 r. 14 p., f.	1,940
Mayhill Wharf, area 3 a. 3 r. 30 p., f.	550
Enclosure of building land, 11 a. 2 r. 1 p., f.	550
Enclosure of grass land, 0 a. 2 r. 32 p., f.	130
Wyeside Cottage and 0 a. 2 r. 4 p., f.	135
Two building sites, 9 a. 0 r. 24 p., f.	600
A freehold nursery, 1 a. 0 r. 30 p.	160
A freehold building site, 5 a. 3 r. 26 p.	500
Monmouth.—The Garth Estate, 150 a. 3 r. 14 p., f.	4,600
Rockfield-rd., an enclosure, 3 a. 0 r. 10 p., f.	160
Wonastow-rd., two farms, 41 a. 0 r. 16 p., f.	1,950
Wonastow-rd., two enclosures, 3 a. 3 r. 38 p., f.	310
Gibraltar Cottage, St. Dial's Wood, and 51 a. 3 r. 12 p., f.	2,800
Cinderhill-st., a cottage and 21 a. 2 r. 36 p., f.	1,875
49, 51, and 53, Cinderhill-st., f.	135
Cinderhill-st., freehold business premises	220
St. Mary-st., f.g.r. 12*l.*, reversion in 41 yrs.	310
5 and 7, St. Mary-st., f.	200
1 and 3, Church-st., with whitesmith's shop, f., r. 43*l.*	750
2 and 4, Agincourt-st., f.	230
21, Minnow-st., f.	340
11, 12, and 18, Agincourt-sq., f.	2,660
Castle Hill, freehold house and warehouse	190
Dixton Hadnock, Mon.—The Kymin Summer House and 9 a. 1 r. 22 p., f.	125
Seven freehold cottages and 13 a. 3 r. 1 p.	247
Four cottages and 4 a 2 r. 36 p., f.	133

March 28.—By HENRY HENDRIKS (at Birmingham).

Edgbaston, Warwick.—3 and 4, George-rd., u.t. 17 yrs., g.r. 6*l.*	700
Handsworth, Staffs.—35, Stafford-rd., u t. 95 yrs., g.r. 5*l.*, r. 28*l.*	350
Harborne, Staffs.—59 and 60, Miles-st., u.t. 50 yrs., g.r. 20*l.*	895

March 29.—By THOMPSON, WHITTON, & LAING (at Exeter).

Tedburn St. Mary, Devon.—East and West Frankford Farm, 125 a. 2 r. 16 p., f.	1,650

March 30.—By WILLSON & PHILLIPS (at Rayleigh).

Rayleigh, Essex.—A freehold house and shop, also two houses adjoining, r. 82*l.*	1,300

April 1.—By C. H. BROWN.

Westminster.—17½ Kensington-place, u.t. 8½ yrs., r. 73*l.*, with reversionary term for 10 yrs. from 1909, g.r. 17*l.*	1,750

By H. V. CHEW.

Walthamstow.—22, Melville-rd., u.t. 78 yrs., g.r. 6*l.*, r. 24*l.*	200

By ALFRED RICHARDS.

Clapton.—91, 93, 95 and 97, Clifden-rd., u.t. 72 yrs., g.r. 16*l.*	1,195

By ROBERT NEWMAN.

Marylebone.—65, Upper Gloucester-pl. and 30, Huntsworth Mews, u.t. 20 yrs., g.r. 22*l.* 8s., e.r. 135*l.*	800
99, Marylebone-rd., u.t. 12 yrs., g.r. 25*l.*, r. 305*l.*	1,000
200, Marylebone-rd., u.t. 19 yrs., g.r. 30*l.*, r. 90*l.*	400
Hyde Park.—45, Connaught-sq., u.t. 18 yrs., g.r. 16*l.* 16s., r. 160*l.*	1,110

By G. A. WILKINSON & SON.

City of London.—Gracechurch-st., f.g.r. 200*l.*, reversion in 32 yrs.	9,100
Maida Hill.—9, Northwick-ter., u.t. 22 yrs., g.r. 8*l.*	560

April 2.—By CHANCELLOR & SONS.

Kingston Hill.—Heather Lodge and 1 acre, u.t. 71 yrs, g.r. 5*l.*, r. 100*l.*	2,000

By WM. HOUGHTON.

Battersea.—83, St. John's-hill, u.t. 63 yrs., g.r. 6*l.*, r. 60*l.*	840
Walthamstow.—50, Priory-av., f.	375

By A. ROBERTSON.

City-rd.—2, Picard-st., u.t. 28 yrs., g.r. 8*l.* 10s., r. 40*l.*	320

By W. WESTON.

Portman-sq.—82, George-st., u.t. 22 yrs., g.r. 25*l.*, e.r. 130*l.*	900

By J. H. NORTH & CO. (at Dublin).

Kilbride, co. Wicklow.—Kippure Lodge and 1,477 acres, f.	2,000

By W. B. HALLET (on the premises).

Kensington.—18, Dewhurst-rd., u.t. 80 yrs., g.r. 8*l.*	620

April 3.—By DOUGLAS YOUNG & CO.

Clapham.—2, Fenwick-pl., u.t. 56 yrs., g.r. 10*l.*, r. 55*l.*	395
Ilford.—73, Pembroke-rd., u.t. 995 yrs., g.r. 5*l.* 3s., r. 24*l.*	220

By HARDS & BRADLY.

St. John's Wood.—11, Acacia-rd., u.t. 33½ yrs., g.r. 10*l.*, r. 68*l.*	500
15, 16, and 17, Woronzow-rd., u.t. 33 yrs., g.r. nil, r. 126*l.*	1,280
Blackheath.—1, Mycenæ-rd., f., r. 36*l.*	500

By F. JOLLY & CO.

Forest Gate.—220, Neville-rd., f.	405

By H. MARTIN NEWCOMBE.

Pimlico.—14, Westbourne-st., u.t. 20 yrs., g.r. nil, r. 50*l.*	455

By NORMAN & SON.

Southend-on-Sea.—19, 21, 23, and 25, Park-st., f., r. 133*l.*	1,710
Burnaby-rd., plot of freehold land	290
Stratford.—81, 83, and 85, Lett-rd., u.t. 56½ yrs., g.r. 12*l.*	520

By REYNOLDS & EASON.

Acton.—116, 118, 120, and 122, Colville-rd., u.t. 93½ yrs., g.r. 20*l.*	585
Aldgate.—20, Hutchison-st., f.	960
Spitalfields.—22, Fournier-street, f.	1,430
24, 26, and 28, Fournier-st., u.t. 12½ yrs., g.r. 95*l.*	880
Whitechapel-road.—No. 167, u.t. 39 yrs., g.r. 32*l.*	900
Maida Vale.—68, Portsdown-rd., u.t. 49 yrs., g.r. 20*l.*, r. 75*l.*	545

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
School Buildings	Berwick-on-Tweed School Board...	Not stated	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
Farmhouse, Silecroft, Cumberland	.....	J. W. Grundy & Son, Architects, Ulverston	April 15
Six Houses, Newtown, Wrexham	.....	J. Edwards, 45, Princess-street, Wrexham	do.
Storage Reservoir, Carronbridge, N.B.	.....	Warren & Stuart, Civil Engineers, 115, Wellington-st., Glasgow	do.
Road Metal	Selby (Yorks) U.D.C.	B. Gray, Civil Engineer, Town Hall, Selby	do.
Building Work, near Kilrea, Ireland	.....	The Rector, Hervey Hill, Kilrea	do.
Additions to Market, Kirkgate	Leeds Corporation	City Engineer, Municipal Buildings, Leeds	do.
Road Materials	Stockton-on-Tees R.D.C.	W. Burton, Surveyor, Billingham, Stockton-on-Tees	do.
Cast-iron Pipes, &c.	Leeds Corporation	H. Dickinson, 1, Whitehall-road, Leeds	do.
100 Houses, Abertillery	J. Lancaster & Co., Ltd.	C. Telford Evans, Architect, 8, Queen-street, Cardiff	do.
Church, Burntisland, N.B.	.....	D. Robertson, Architect, 19, Shandwick-place, Edinburgh	do.
Additions to Convent, Kinsale, Ireland	.....	S. F. Hines, Architect, 21, South-mall, Cork	do.
Sewers, Drains, &c., Abertillery, Mon	Messrs. J. Lancaster & Co., Ltd.	C. T. Evans, Architect, 8, Queen-street, Cardiff	do.
Lodge Buildings	Millom Masonic Buildings Co., Ld.	C. A. Haynes, 16, Kingsland-road, Millom, Cumberland	do.
House, West Park-street, Dewsbury	.....	Marriott & Sons, Civil Engineers, Church-st. Chambers, Dewsbury	do.
*Wood Paving	Paddington Borough Council	Surveyor's Office, Town Hall, Harrow-road	do.
*Jarrah Wood Block	do.	do.	do.
*Portland Cement, &c.	do.	do.	do.
*Pitch	do.	do.	do.
Paving Works, Seaford, Sussex	Trustees of T. Crook	B. A. Miller, Surveyor, 3, Churton-place, Seaford	April 16
Iron Castings, &c., Dublin	Dublin, Wicklow, & Wexford Ry. Co.	M. F. Keogh, Westland-row, Dublin	do.
Tar-paving Materials	Carshalton U.D.C.	W. W. Gale, Civil Engineer, High-street, Carshalton	do.
Additions to Hospital	Crewe Corporation	G. Shore, Municipal Offices, Crewe	do.
Sewerage Works, &c.	Walsall Corporation	Borough Surveyor, Bridge-street, Walsall	do.
Bridge from Newdigate to Rusper	Dorking R.D.C.	W. Rapley, Surveyor, Holmwood, near Dorking	do.
Sewage Farm Extension Works, Minworth	Birmingham Corporation	J. D. Watson, Engineer, Tyburn, near Birmingham	April 17
Stone Bridge, near Shipley Glen, Baildon Moor, Yorks	.....	J. H. Cox, Civil Engineer, Town Hall, Bradford	do.
Additions to Workhouse, &c.	West Ashford (Kent) Union Gdns.	Young & Brown, 7, Southampton-street, W.C.	do.
Additions, &c., to Mortuary, Gloucester Green	Oxford Corporation	Surveyor, Town Hall, Oxford	do.
Sewerage Works, &c.	Leeds Corporation	T. Hewson, Civil Engineer, Municipal Buildings, Leeds	do.
River Diversion Works, Wall, &c.	Todmorden Corporation	C. R. Pease, Engineer, Town Hall, Todmorden	do.
School, Vickerstown	Barrow-in-Furness School Board	H. T. Fowler, Architect, Ramsden-square, Barrow	April 18
Additions to Distillery, Ballindalloch, N.B.	.....	C. C. Doig, Architect, Elgin	do.
Road Metal	Fenton (Staffs) U.D.C.	S. A. Goodall, Surveyor, Town Hall, Fenton	do.
Retort House Floors, &c., Albion-street	Salford Corporation	L. C. Evans, Town Hall, Salford	do.
*Making up Roads	Ealing U.D.C.	Engineer, Public Offices, Ealing, W.	do.
*Repair of Floors	Metropolitan Asylums Board	Offices, Embankment, E.C.	do.
Slag Road Metal (3,000 tons)	Hoyland Nether U.D.C.	W. P. Young, Surveyor, Town Hall, Hoyland, near Barnsley	April 19
Cottage Homes, School, &c., Culcheth	Salford Union Guardians	H. Lord, Architect, 42, Deansgate, Manchester	do.
Drainage Works	Banffshire County Council	J. Barron, Civil Engineer, 1, Bon Accord-street, Aberdeen	do.
Cast-iron Pipes, &c.	Edinburgh Corporation	Engineer, 5, Dewar-place, Edinburgh	April 20
Additions to Bute Arms, Merthyr	Messrs. A. Buchanan & Co.	J. L. Smith & Davies, Architects, 50, High-street, Merthyr	do.
Schools	Cressing (Essex) School Board	Clare & Ross, Architects, 66, Duke-street, Chelmsford	do.
Flints, &c.	Whitchurch (Hants) R.D.C.	S. Clarke, Council Offices, Whitchurch	April 22
Extension of Fire Station	Willenhall (Staffs) U.D.C.	T. E. Fellows, Civil Engineer, Town Hall, Willenhall	do.
Additions to Police Station, Holbeck	Leeds Corporation	City Engineer, Municipal-buildings, Leeds	do.
*Brickwork Abutments, &c.	West London Extension Railway	Engineeer, Paddington Station	do.
Paving Works, &c.	Goole U.D.C.	L. J. Velt, Civil Engineer, Council Offices, Goole	April 23
Sewerage Works, &c.	Watford R.D.C.	E. Lailey, Engineer, 1, Market-street, Watford	do.
*Repairs, &c.	Metropolitan Asylums Board	Offices, Embankment, E.C.	April 25
Schools, Harold-street	Great Grimsby School Board	H. C. Scaping, Architect, Court-chambers, Grimsby	April 26
Waterworks Extension	Goole U.D.C.	J. C. Melliss, Civil Engineer, 264, Gresham-house, Old Broad-st.	April 27
Engine House, Water Tower, &c., Coates	Cirencester R.D.C.	F. Redman, Engineer, 34, Wood-street, Swindon	do.
Sewage Works, West Timperley	Altrincham U.D.C.	Hinnell & Murphy, Civil Engineers, 41, Corporation-st., Manchester	do.
Electric Lighting Plant	Middlesbrough Corporation	R. Hammond, Civil Engineer, 64, Victoria-street, S.W.	April 30
*Foundations	Office of Works	Storey's Gate, S.W.	do.
*Sewers, &c.	Ilfracombe U.D.C.	Town Hall, Ilfracombe	May 14
House, Head's Nook, Carlisle	.....	W. Wright, Warwick-bridge, Carlisle	No date
Two Shops, Gedling	.....	H. J. Price, Architect, 24, Low-pavement, Nottingham	do.
Four Cottages, Little Haven, Pembrokeshire	.....	G. Palmer & Son, Haverfordwest	do.
Grit Setts	Manchester Corporation	Chief Clerk, Town Hall, Manchester	do.
Paving Works, Ebenezer-square, Keighley	.....	W. H. Hopkinson, Civil Engineer, Town Hall	do.
Mission and Schools, Rugby	.....	E. H. L. Barker, Architect, Hereford Offices, Rugby	do.
Additions to Foundary, Leeds	.....	W. H. Baxter, Limited, Engineers, Gellord-road, Leeds	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Inspector	S. Stoneham R.D.C.	3*l.* 3*s.* per week	April 15
*Assistant	Islington Borough Council	90*l.* per annum	April 18
*Clerk of Works	.....	3*l.* 3*s.* per week	do.
*Inspector of Nuisances	Stroud U.D.C.	100*l.* per annum	April 23

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. —. Contracts, pp. lv. vi. viii. x. & xxiii. *Public Appointments, pp.* xx. & xxiii.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	14	6	per 1,000	alongside,	in river.
Rough Stocks and Grizzles	1	11	0	,,	,,	,,
Facing Stocks....	2	12	0	,,	,,	,,
Shippers	2	8	0	,,	,,	,,
Flettons.....	1	9	0	,,	at railway	depot.
Red Wire Cuts ..	1	15	6	,,	,,	,,
Best Fareham Red	3	11	0	,,	,,	,,
Best Red pressed Ruabon Facing,	5	5	0	,,	,,	,,
Best Blue Pressed Staffordshire ..	4	4	6	,,	,,	
Do., Bullnose	4	9	0	,,	,,	,,
Best Stourbridge Fire Bricks	4	2	6	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	13	0	0	,,	,,	,,
Headers	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	17	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers..	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamfered, Squints	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers and Headers ..	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	14	0	0	,,	,,	,,
Double Stretchers	15	0	0	,,	,,	,,
Double Headers..	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
plays, Chamfered, Squints	14	0	0	,,	,,	,,
Seconds Quality White and Dipped Salt Glazed ...	2	0	0	,,	less than best	

	£	s.	d.		
Thames and Pit Sand			7	3	per yard, delivered.
Thames Ballast			6	0	,, ,,
Best Portland Cement			36	6	per ton ,,
Best Ground Blue Lias Lime..			25	6	,, ,,

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	13s	6d. per yard, delivered
Stourbridge Fire-clay in sacks,	28s.	od. per ton at rly. dpt.

STONE.

	s.	d.	
Ancaster in blocks	2	0	per ft. cube, deld. rly. depôt.
Bath ,, ...	1	7	,, ,,
Farleigh Down Bath ..	1	8	,, ,,
Beer in blocks	1	6½	,, ,,
Grinshill ,, ...	1	10	,, ,,
Brown Portland in blocks	2	2	,, ,,
Darley Dale in blocks..	2	1½	,, ,,
Red Corsehill ,,	2	5	,, ,,
Red Mansfield ,,	2	4½	,, ,,
Hard York in blocks ...	2	10	,, ,,
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2	8	per ft. super. at rly. depôt
,, ,, 6 in. Rubbed Ditto...	3	0	,, ,,
,, ,, 3 in. sawn both sides slabs (random sizes)	1	3	,, ,,
,, ,, 3 in. self-faced Ditto	0	9½	,, ,,

SLATES.

in.	in.	£	s.	d.	
20×10	best blue Bangor ...	11	5	0	per 1000 of 1200 at ry. dep.
,,	best seconds ,,	10	15	0	,, ,,
16× 8	best ,,	6	2	6	,, ,,
20×10	best blue Portmadoc	10	18	0	,, ,,
16× 8	best blue Portmadoc	6	0	0	,, ,,
20×10	best Eureka unfading green.....	11	2	6	,, ,,
16× 8	,, ,,	6	15	0	,, ,,
20×10	Permanent green	10	0	0	,, ,,
16× 8	,, ,,	5	12	6	,, ,,

TILES.

	s.	d.	
Best plain red roofing tiles ...	41	6	per 1,000 at rly. depôt.
Hip and valley tiles... ...	3	7	per doz. ,, ,,
Best Broseley tiles	48	6	per 1,000 ,, ,,
Hip and valley tiles... ...	4	0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57	6	per 1,000 ,, ,,
Do. ornamental Do.	60	0	,, ,, ,,
Hip tiles.....	4	0	per doz. ,, ,,
Valley tiles.....	3	9	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes) .	50	9	per 1,000 ,, ,,
Hip tiles	4	1	per doz. ,, ,,
Valley tiles.....	3	8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	16	10	0	18	0	0
Deals: best 3 by 9	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 8 in. and 3 in. by 7 in. and 8 in.....	12	10	0	13	10	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		
Deals: seconds.....	1	0	0	less than best		
Battens: seconds.....	0	10	0	,, ,,	,,	
Fir timber: Best middling Danzig or Memel (average specification)	At per load 4	10	0	of 50 ft. 5	0	0
Seconds	4	5	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Swedish balks.....	2	15	0	3	0	0
Pitch pine timber (35 ft. average)...	4	0	0	4	10	0

PRICES CURRENT (*Continued*).

WOOD.

JOINERS' WOOD.	At per standard. £	s.	d.	£	s.	d.
White Sea: First yellow deals, 3 in. by 11 in.....	27	10	0	28	10	0
3 in. by 9 in.	24	0	0	25	0	0
Battens, 2½ in. and 3 in. by 7 in.	20	0	0	21	0	0
Second yellow deals, 3 in. by 11 in.	22	10	0	24	0	0
,, ,, 3 in. by 9 in.	20	0	0	21	0	0
Battens, 2½ in. and 3 in. by 7 in.	16	10	0	18	0	0
Third yellow deals, 3 in. by 11 in. and 9 in.	16	10	0	18	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Petersburg: first yellow deals, 3 in. by 11 in.	25	0	0	26	0	0
Do. 3 in. by 9 in.	22	0	0	23	0	0
Battens.....	16	10	0	17	10	0
Second yellow deals, 3 in. by 11 in.....	18	10	0	20	0	0
Do. 3 in. by 9 in.	17	0	0	18	0	0
Battens.....	14	0	0	14	10	0
Third yellow deals, 3 in. by 11 in.....	15	0	0	16	10	0
Do. 3 in. by 9 in.	14	0	0	14	10	0
Battens.....	12	10	0	13	10	0
White Sea and Petersburg:—						
First white deals, 3 in. by 11 in..	15	10	0	16	10	0
,, ,, ,, 3 in. by 9 in. ..	14	0	0	15	0	0
Battens.....	12	10	0	13	10	0
Second white deals 3 in. by 11 in.	14	0	0	15	0	0
,, ,, ,, 3 in. by 9 in.	13	0	0	14	0	0
,, ,, battens	11	0	0	12	0	0
Pitch pine: deals	16	0	0	18	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—						
First, regular sizes	30	0	0	33	0	0
Broads (12 in. and up)	2	0	0	more.		
Oddments	22	0	0	24	0	0
Seconds, regular sizes	24	10	0	26	10	0
Yellow Pine Oddments	20	0	0	22	0	0
Kauri Pine—						
Planks, per ft. cube	0	3	6	0	4	6
Danzig and Stettin Oak Logs—						
Large, per ft. cube	0	2	6	0	2	8
Small ,, ,, ...	0	2	4	0	2	7
Wainscot Oak Logs, per ft. cube ..	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	8	0	0	7
in. do. do.	0	0	7	-	-	-
Dry Mahogany—						
Honduras, Tabasco, per ft. sup. as inch	0	0	9	0	0	11
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	0
Dry Walnut, American, per ft. sup. as inch.....	0	0	10	0	1	0
Teak, per load	16	0	0	20	0	0
American Whitewood Planks—						
Per ft. cube.....	0	2	3	0	3	0

JOISTS, GIRDERS, &c.

	In London, per ton. £	s.	d.	Delivered to Railway Vans, per ton. £	s.	d.
Rolled Steel Joists, ordinary sections	7	15	0	8	15	0
Compound Girders ,, ,,	9	10	0	10	15	0
Angles, Tees and Channels, ordinary sections	9	7	6	11	7	6
Flitch Plates	9	15	0	10	10	0
Cast Iron Columns and Stanchions, including ordinary patterns	8	5	0	10	0	0

METALS.

IRON.—	Per ton, in London. £	s.	d.	£	s.	d.
Common Bars.....	9	10	0	-	-	-
Staffordshire Crown Bars, good merchant quality	9	15	0	10	0	0
Staffordshire "Marked Bars" ..	11	10	0	-	-	-
Mild Steel Bars.....	9	10	0	10	10	0
Hoop Iron, basis price.....	10	5	0	10	15	0
,, ,, galvanised	16	0	0	-	-	-
(* And upwards, according to size and gauge.)						
Sheet Iron, Black.—						
Ordinary sizes to 20 g.	10	15	0	-	-	-
,, ,, to 24 g.	11	15	0	-	-	-
,, ,, to 26 g.	13	5	0	-	-	-
Sheet Iron, Galvanised, flat, ordinary quality.—						
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	13	0	0	-	-	-
,, ,, 22 g. and 24 g.	13	15	0	-	-	-
,, ,, 26 g.....	15	10	0	-	-	-
Sheet Iron, galvanised, flat, best quality.—						
Ordinary sizes to 20 g.	17	0	0	-	-	-
,, ,, 22 g. and 24 g.	17	10	0	-	-	-
,, ,, 26 g.....	19	0	0	-	-	-
Galvanised Corrugated Sheets.—						
Ordinary sizes, 6 ft. to 8 ft. 20 g.	13	0	0	-	-	-
,, ,, 22 g. and 24 g.	13	10	0	-	-	-
,, ,, 26 g.	14	0	0	1	10	0
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker ..	13	0	0	-	-	-
,, ,, 22 g. and 24 g.	14	0	0	-	-	-
,, ,, 26 g.	15	0	0	-	-	-
Cut nails, 3 in. to 6 in..... (Under 3 in. usual trade extras.)	11	10	0	-	-	-
LEAD—Sheet, English, 3 lbs. & up.	16	10	0	-	-	-
Pipe in coils	17	0	0	-	-	-
Soil Pipe..	19	10	0	-	-	-
ZINC—Sheet—						
Vieille Montagne ..... ton	25	0	0	-	-	-
Silesian.....	24	10	0			
COPPER—						
Strong Sheet..... per lb.	0	1	0½	-	-	-
Thin ..... ,,	0	1	2	-	-	-
Copper nails ..... ,,	0	1	2	-	-	-
BRASS—						
Strong Sheet..... ,,	0	0	11	-	-	-
Thin ,, ... ,,	0	1	1	-	-	-
TIN—English Ingots ..... ,,	0	1	4½	-	-	-
SOLDER—Plumbers' ..... ,,	0	0	7½	-	-	-
Tinmen's ..... ,,	0	0	8½	-	-	-
Blowpipe ..... ,,	0	0	9½	-	-	-

PRICES CURRENT (*Continued*).

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	3d.	per ft.	delivered.
,, fourths	2¾d.	,,	,,
21 oz. thirds	3¼d.	,,	,,
,, ,, fourths.....	3¼d.	,,	,,
26 oz. thirds	5d.	,,	,,
,, ,, fourths	4¼d.	,,	,,
32 oz. thirds	6d.	,,	,,
,, ,, fourths	5¼d.	,,	,,
Fluted sheet, 15 oz.	3¼d.	,,	,,
,, ,, 21 ,, ...	4¼d.	,,	,,
½ Hartley's Rolled Plate.....	3d.	,,	,,
⅜ ,, ,, ,, ...	3½d.	,,	,,
¼ ,, ,, ,, ...	4d.	,,	,,

OILS, &c.

	£	s.	d.
Raw Linseed Oil in pipes.....per gallon	0	2	2
,, ,, ,, in barrels ..... ,,	0	2	3
,, ,, ,, in drums ..... ,,	0	2	5
Boiled ,, ,, in pipes..... ,,	0	2	4
,, ,, ,, in barrels ..... ,,	0	2	5
,, ,, ,, in drums ..... ,,	0	2	7
Turpentine, in barrels ..... ,,	0	2	6
,, in drums..... ,,	0	2	8
Genuine Ground English White Lead ...per ton	25	0	0
Red Lead, Dry..... ,,	24	10	0
Best Linseed Oil Putty.....per cwt.	0	9	0
Stockholm Tar .....per barrel	1	10	0

VARNISHES, &c.

	per gallon £	s.	d
Fine Elastic Copal Varnish for outside work ...	0	16	6
Best Elastic Copal Varnish for outside work ...	1	0	0
Best Elastic Carriage Varnish for outside work	0	16	6
Best Hard Oak Varnish for inside work.....	0	10	6
Best Extra Hard Church Oak Varnish for inside work	0	10	6
Fine Hard Copal Varnish for inside work	0	16	0
Best Hard Copal Varnish for inside work	1	0	0
Best Hard Carriage Varnish for inside work....	0	16	0
Extra Pale Paper Varnish	0	12	0
Best Japan Gold Size	0	10	0
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	9	0
Berlin Black	0	15	0
Knotting	0	10	0
Best French and Brush Polish	0	10	0

TO CORRESPONDENTS.

J. F.—W. & G. N.—J. H. C. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to **THE EDITOR**; those relating to advertisements and other exclusively business matters should be addressed to **THE PUBLISHER**, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of tenders accepted unless the amount of the tender is given, nor any list in which the lowest tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ALCESTER.—For alterations, &c., to bridge, over the river Alne, Little Alne, Aston Cantlow, for the Rural District Council. Mr. Chas. Gander, Surveyor, Council Offices, Alcester:—

S. Keyte..... £211 0 | J. Bromley..... £144 10

Surveyor's estimate, £150

CARDIFF.—For the erection of chimney shaft. &c., Roath, for the Corporation. Mr. W. Harpur, C.E., Town Hall, Cardiff. Quantities by the engineer:—

R. H. B. Neal	£2,540 0 0	Custodis Chimney Co.	£1,600 0 0
Walters & Johns	2,072 18 7	Clark & Co.,	
Knox & Wells	1,770 0 0	Cardiff*	1,563 1 5
Chubb & Co...	1,732 0 0		
Symonds & Co.	1,626 12 1		

COLNE (Lancs.).—For the erection of electric lighting station, &c., Phillips-lane, for the Corporation. Mr. T. H. Hartley, Borough Surveyor, Town Hall, Colne. Quantities by Borough Surveyor:—

Masonry, &c.

J. & D. Lancaster	£3,172 9 10	W. Townson ..	£2,428 7 0
Bottomly & Co.	2,601 19 6	J. Hawley, Colne*.....	2,363 9 3
P. Robinson ..	2,445 9 5		

Carpentry and Joinery.

Latham & Rushton.....	£389 5 6	Ruddrough & Co.	£378 0 0
Caddie Bros. ..	386 3 7	Jas. Roberts....	374 0 0
Jno. Wiseman ..	380 0 0	Horsfeld & Jackson, Colne* ..	351 9 9

■EASTLEIGH (Hants).—For the erection of boundary wall, &c., at the cemetery, for the Urban District Council. Mr. W. Stringfellow, C.E., Council Offices, Eastleigh:—

W. H. Whitehead	£478 4 8	W. Jupe, Bitterne Park, near Southampton* ...	£325 7 6
H. J. Hood	440 0 0		
F. Osman.....	421 0 0		
J. Treherne	392 3 6		

[*See also next page.*

TUNBRIDGE WELLS.—For sewering and making up the undermentioned roads, for the Corporation :—

—	Nelson-road.	Dorset-road.	Napier-road. Portion, 36 ft. Wide.	Napier-road. Portion, 20 ft. Wide.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Arnold & Sons	1,103 10 7	1,283 2 9	973 2 0	667 1 4	4,026 16 8
W. H. Wheeler	1,010 2 9	1,110 19 8	834 11 6	595 0 2	3,550 14 1
L. Charlton	976 6 0	1,044 6 10	795 9 4	557 18 10	3,394 1 0
Laurence & Thacker	886 14 1	965 12 10	767 10 5	589 8 11	3,209 6 3
J. Jarvis	888 9 4	1,002 6 5	773 9 1	503 9 0	3,167 13 10*

The following tenders for sewering and making-up Lower Albion-road were received :

Arnold & Sons	£602 14 11	J. Jarvis	£445 7 4
W. H. Wheeler	477 3 3	Laurence & Thacker*	404 6 2

HIGH WYCOMBE.—For erection of pair of houses, for Messrs. Birch & Gibbs, Amersham Hill. Mr. Arthur Vernon, architect, 29, Cockspur-street, London, S.W., and High Wycombe :—

Harris	£1,944 0 0	Gibson	£1,625 0 0
Furniss	1,850 12 6	Lee	1,475 4 0
Nash	1,693 0 0	Hunt*	1,317 0 0
Flint	1,667 0 0		

HIGH WYCOMBE.—Additions to Holmby, for Mr. John Rutty. Mr. Arthur Vernon, architect, 29, Cockspur-street, London, S.W., and High Wycombe :—

Gibson	£461	Hunt	£445

HIGH WYCOMBE.—For new roads on Mr. Terry's estate. Mr. Arthur Vernon, architect, 29, Cockspur-street, London, S.W., and High Wycombe :—

Siddons & Freeman Hill	£4,319 3,342	Lee*	£3,210

LONDONDERRY.—For re-seating, &c., Presbyterian Church, Donagheady, for the Committee. Mr. M. A. Robinson, C.E., Richmond-street, Londonderry :—

R. Colhoun	£770	Donnell & Co., Strabane, Co. Tyrone*	£570
McKee & Sons	750	W. G. Mooney	561
Jas. McClay	725		
D. McCaffrey	703		

NORWICH.—For the erection of "Scott Memorial Church," Thorpe-road, for the trustees. Mr. A. F. Scott, F.S.I., architect :—

S. H. Blyth	£4,998 17 6	J. Evans	£4,250 0 0
Daws & Son	4,489 0 0	T. Gill	4,249 0 0
J. W. Collins	4,450 0 0	Scarles Bros. Norwich*	3,974 0 0
J. S. Smith	4,393 0 0		
G. E. Hawes	4,268 0 0		

[Architect's estimate £3,906.]

PURSTON.—For three houses at Purston, near Pontefract, for Messrs. D. F. & S. Littlewood. Messrs. Garside & Pennington, architects, Pontefract. Quantities by architects :—

Bricklaying and Joinery.—Geo. Clements, Featherstone, near Pontefract	£478 0 0
Plumbing and Glazing.—J. S. Haiking, Featherstone	77 10 6
Slating.—Geo. Spurr, Pontefract	49 9 0
Plastering.—T. W. Senior, Pontefract	48 12 0
Painting.—Burton & Son, Pontefract	10 0 0
	£663 11 6

RYDE.—For house, shop, and bakehouse, Oakfield, Ryde, for Mr. A. Cook. Mr. John I. Barton, architect :—

Jenkins	£963 10	Hayden	£747 10
Newnham	800 0	Barton	730 0
Whitewood	780 0	Wheeler Bros.*	680 0

ST. HELENS (Isle of Wight).—For stores and sail loft, St. Helens, Isle of Wight, for Messrs. Westmacott, Stewart, & Co., Limited. Mr. John I. Barton, architect, Ryde :—

Barton	£1,187 0	Wheeler Bros.	£998 10
Hayden	999 0	C. Love, Bembridge*	910 0

SHEETON.—For additions to flour mill, Pyenest-street, Sheeton, for Messrs. Lease & Son. Messrs. R. Scrivener & Sons, architects, Hanley, Staffs :—

T. R. Yoxall	£1,033	Ball & Shenton	£827
A. Ward	1,005	Leonard	825
G. Ellis	999	M. Ward	815
S. J. Wilton	919	Cornes & Son, Hanley*	775
J. Godwin	851		

STOCKPORT.—For the erection of minister's house, Hazel Grove, for the Wesleyan Trustees. Mr. C. T. Adshead, architect, Liverpool. Quantities by architect :—

W. L. Adkinson	£980 0	George Oldham, Stockport	£887 0
J. H. Wild	960 10		
Samuel Daniels	915 0		

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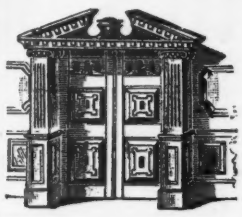

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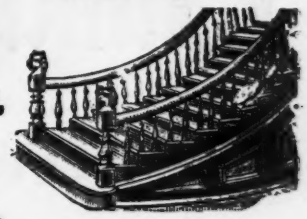

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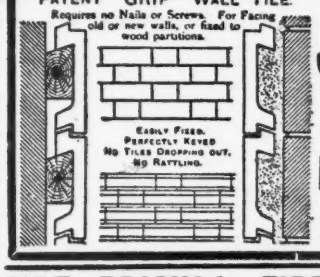

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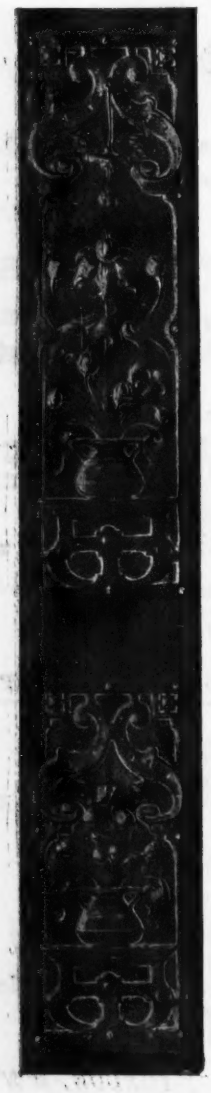

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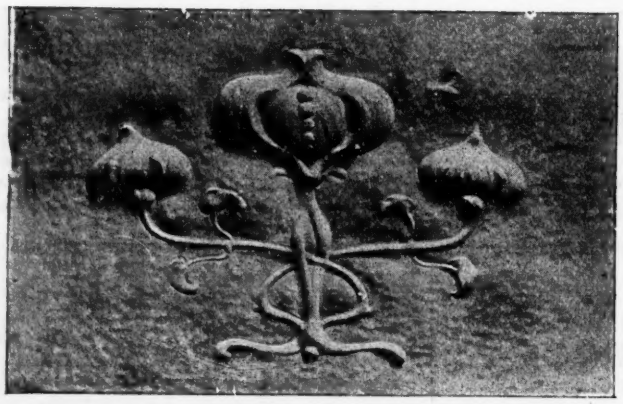

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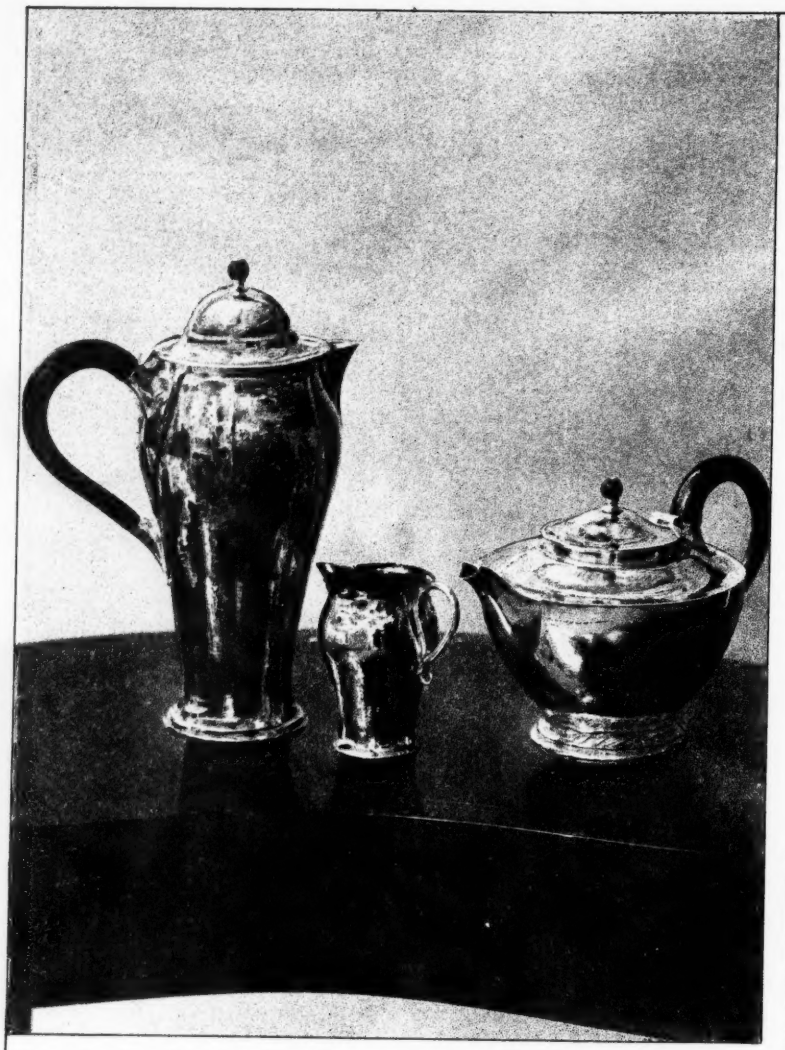

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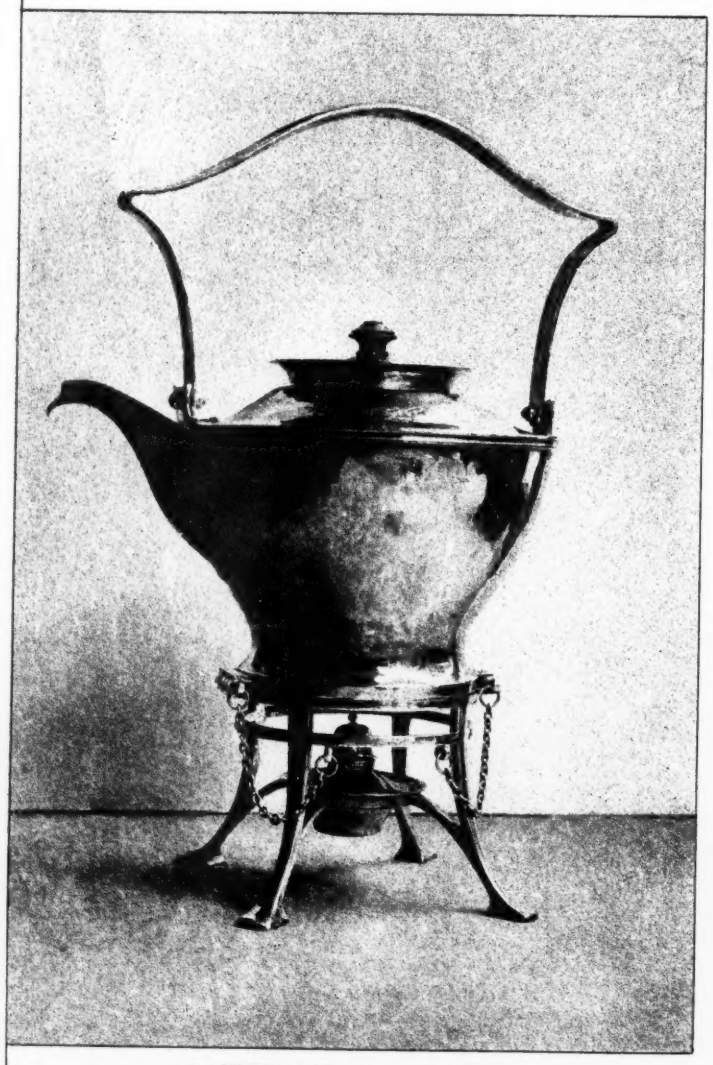

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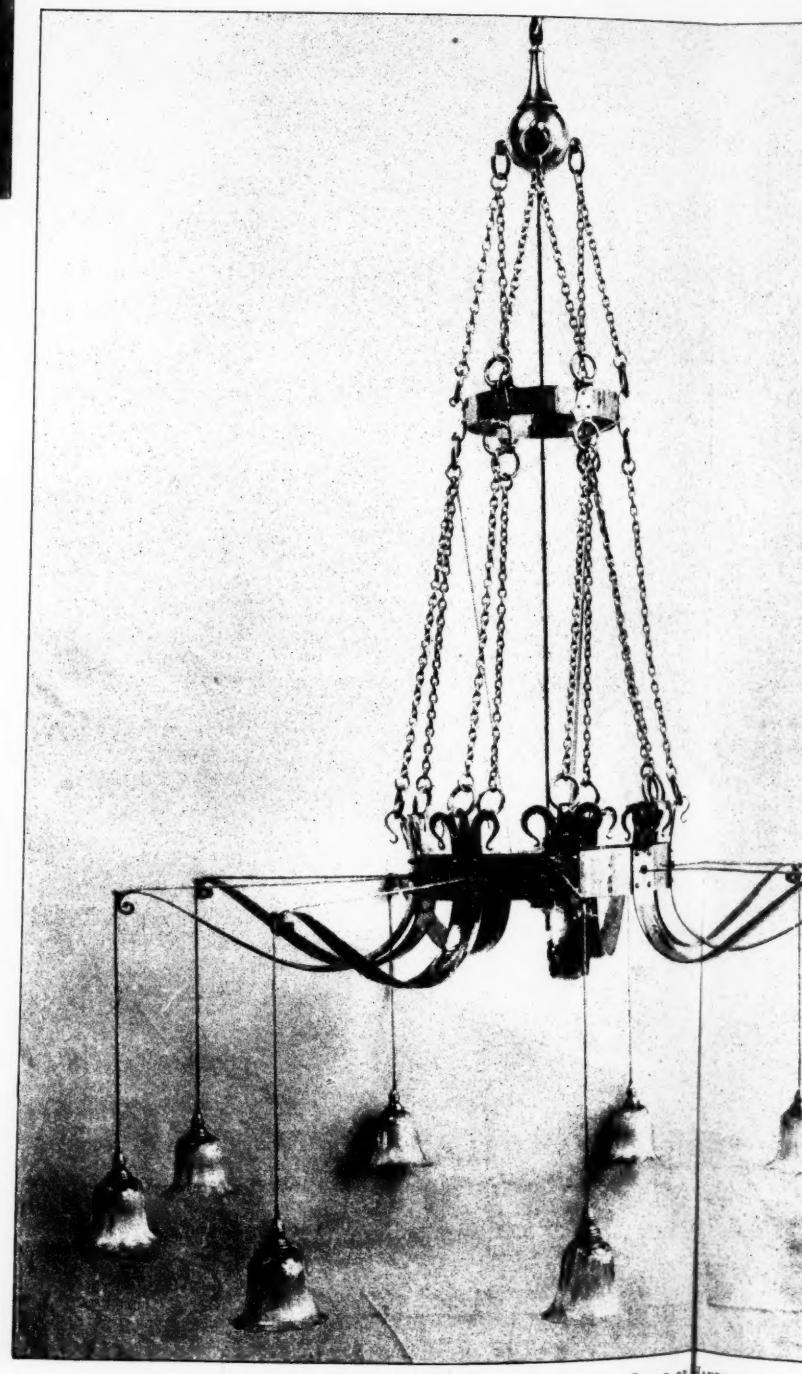

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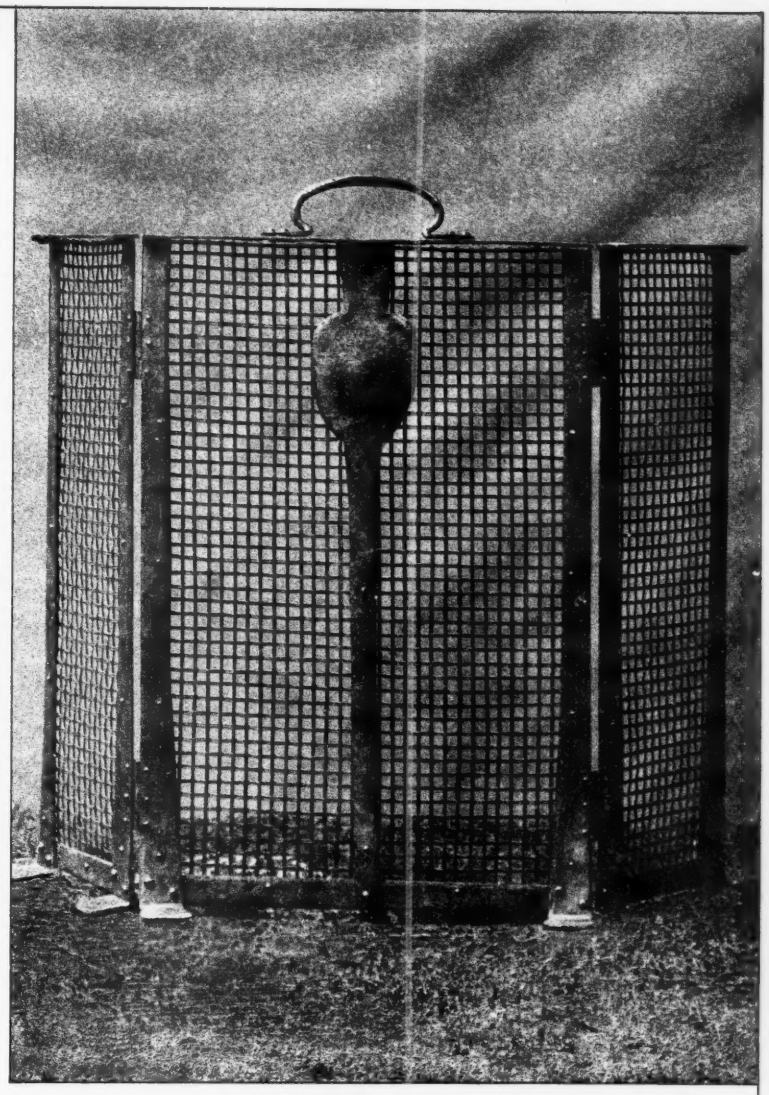

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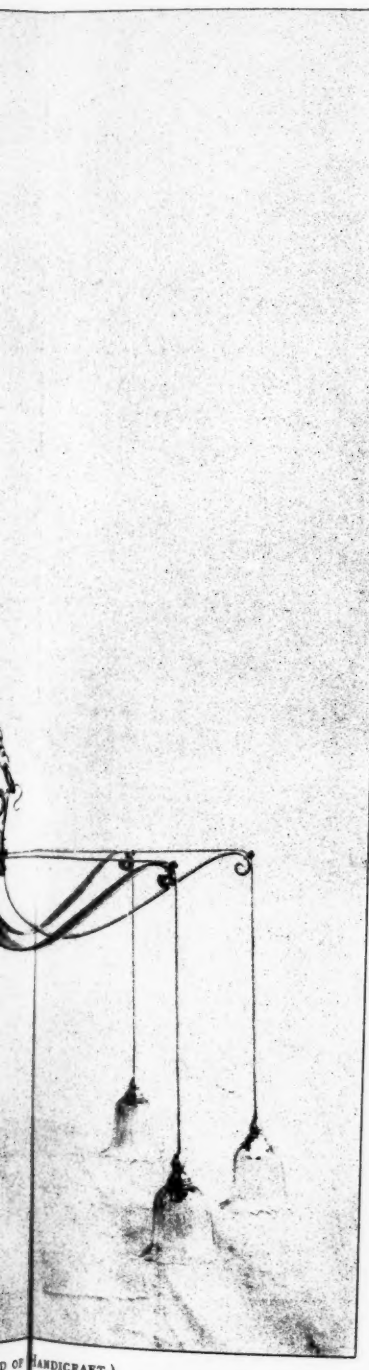

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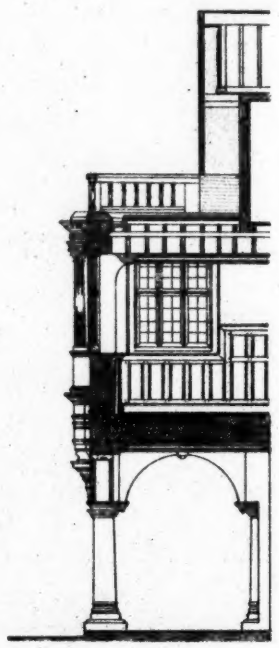

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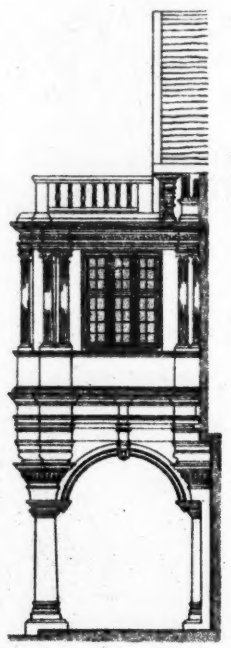
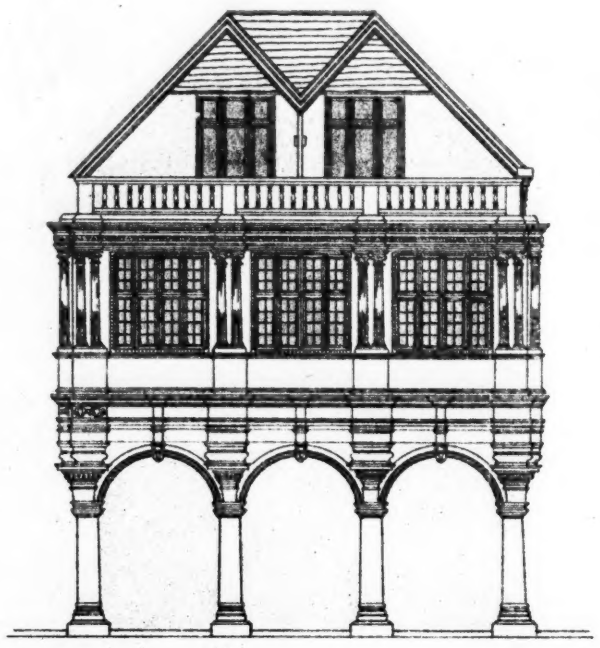


End Elevation



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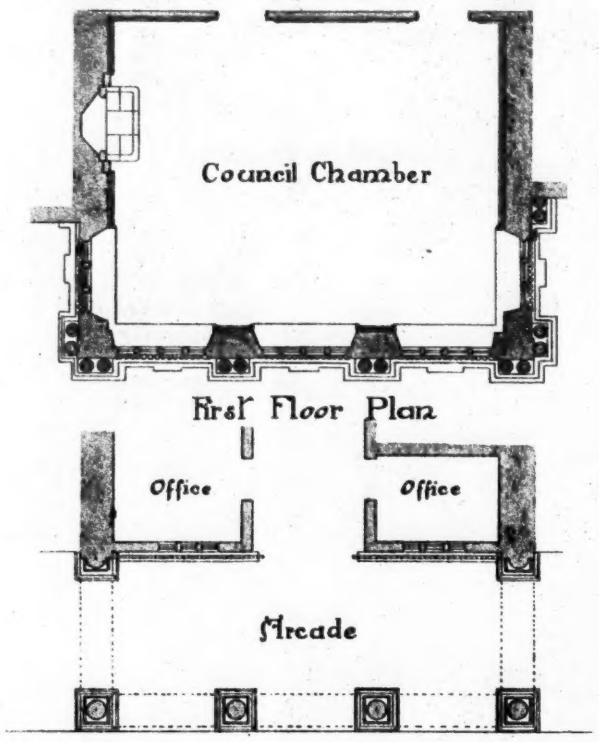

First Floor Plan

Ground Plan

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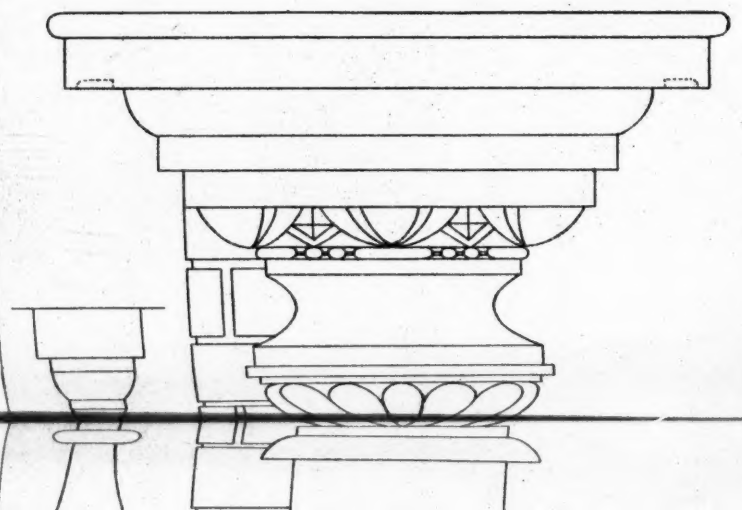
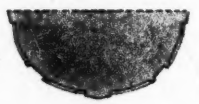
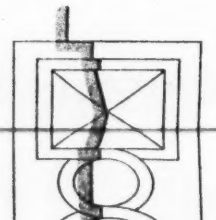
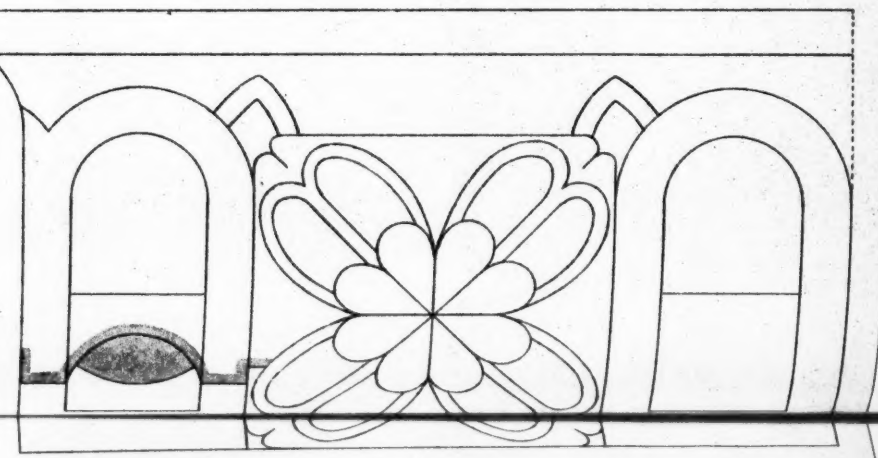




Plan





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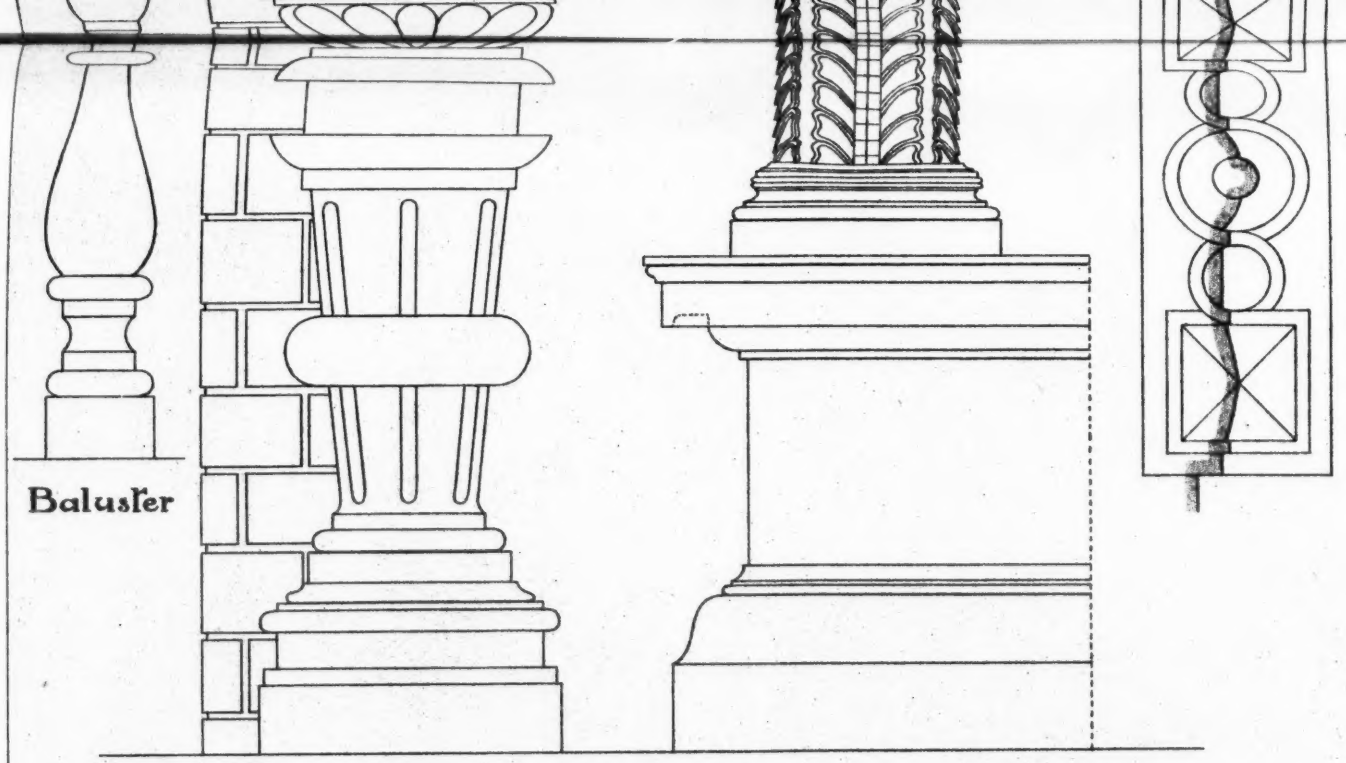

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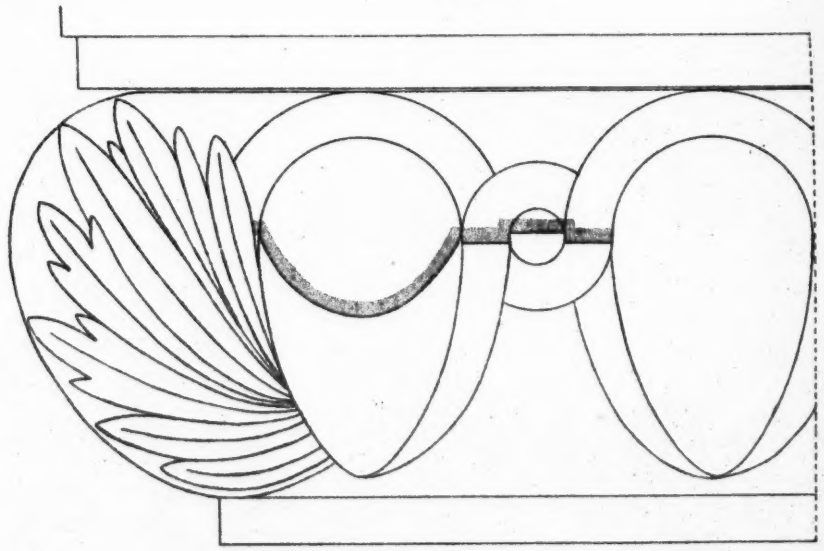
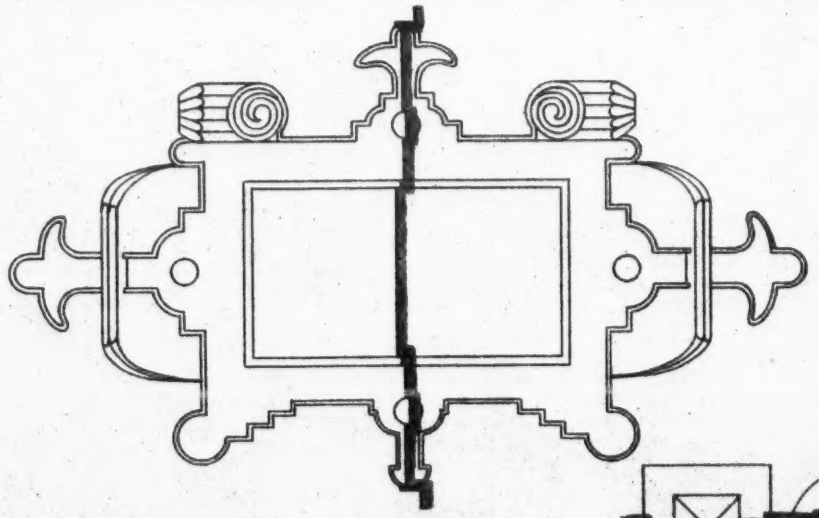
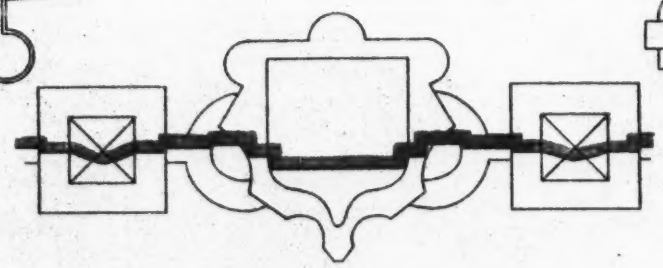




Raised Panel



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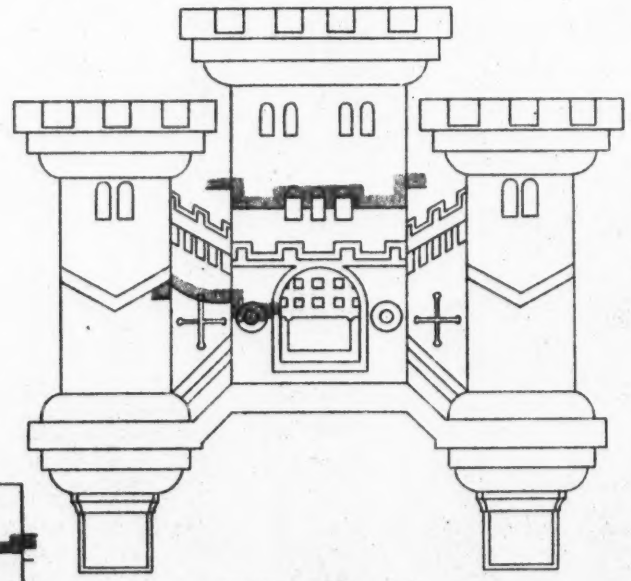

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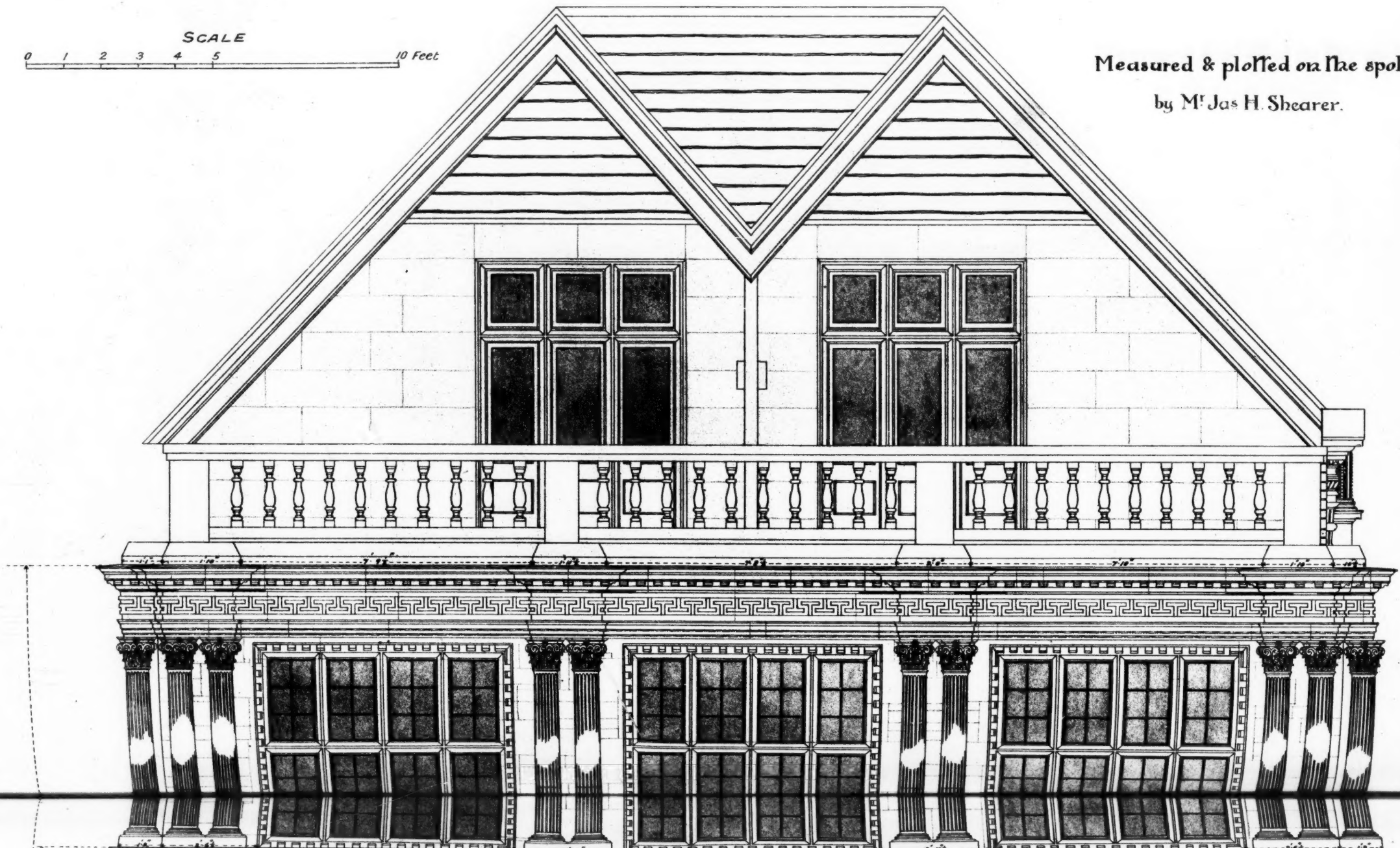

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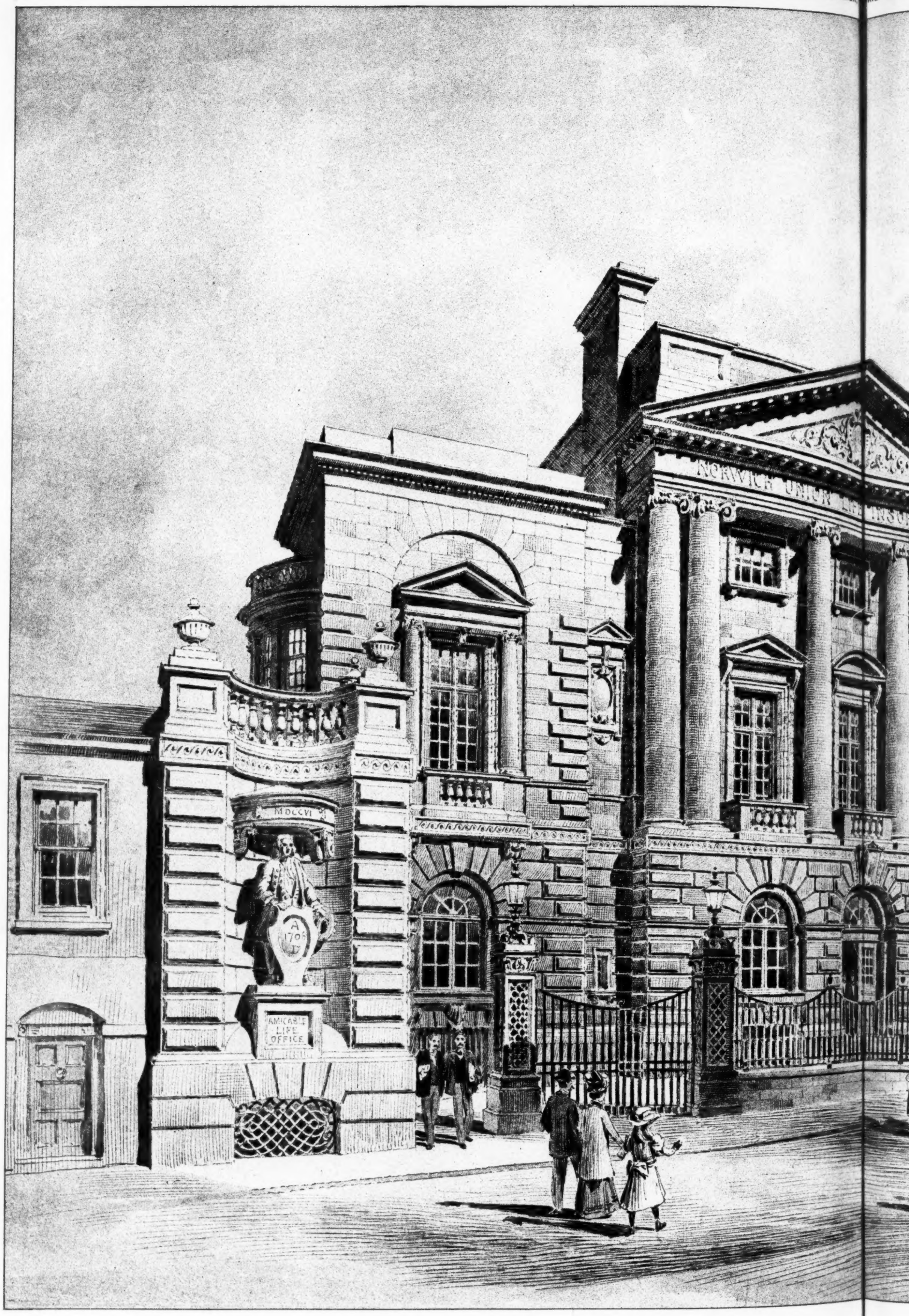

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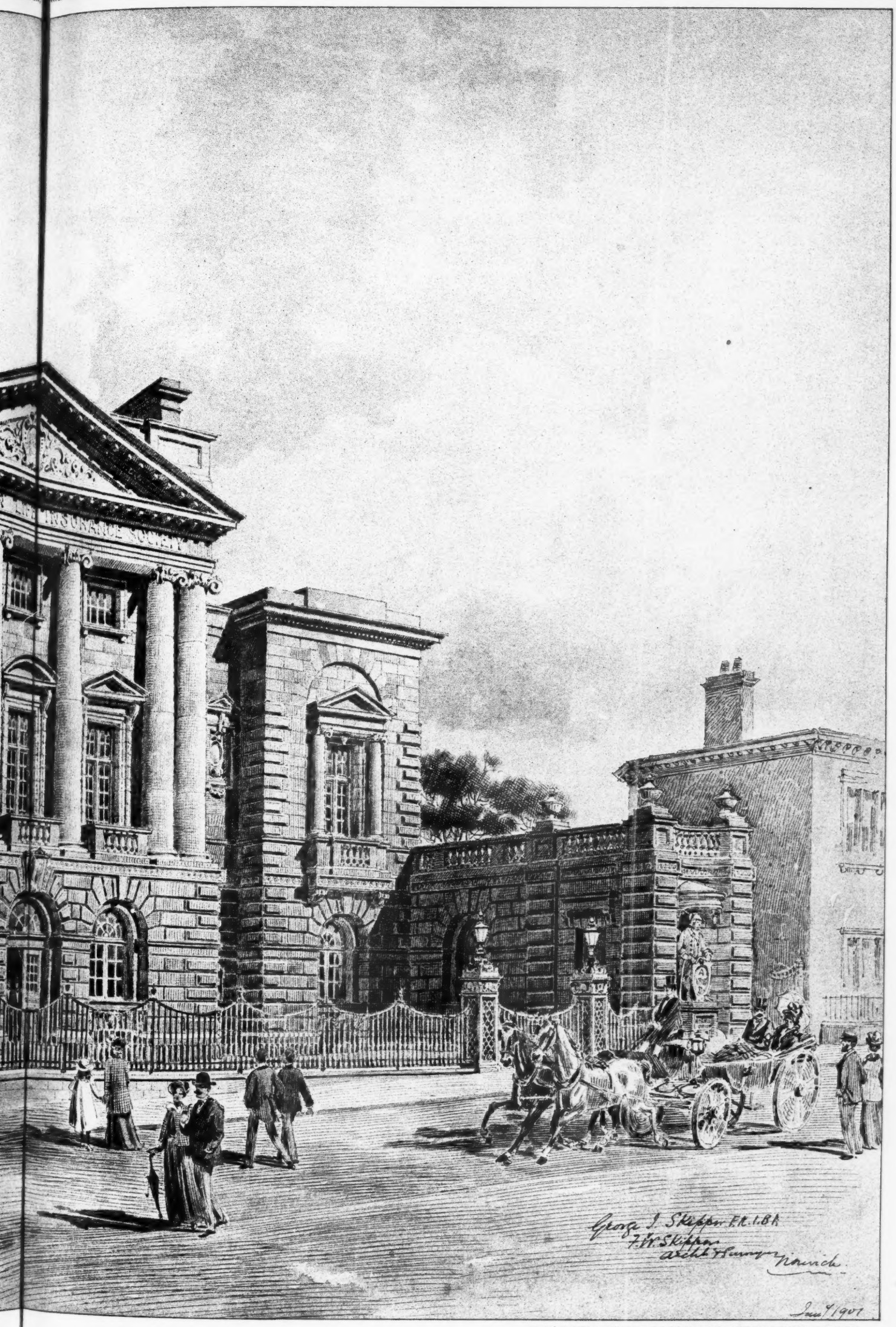

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